USSR

UDC 518 : 517.944/.947

NIKOLAYEV, Ye. S., and SAMARSKIY, A. A. (Moscow)

"Selection of Iteration Parameters in Richardson's Method"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 4, Jul-Aug 72, pp 960-973

Abstract: The article gives a description of Richardson's method for solving an operator equation of the first kind in a Hilbert space and the ordering of the set of parameters for the case $n = 2^p$ for which the method becomes numerically stable. This order was suggested in an article by one of the authors (Samarskiy) as well as in an article by V. N. Lebedev and S. A. Finogenov. Two theorems are formulated on computational stability, and the described parameter ordering method is generalized for the case of an arbitrary number of parameters n. Results are given for an experimental study of the computational stability of the method with the described set of parameters.

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NIKOLAYEV, Yu. M.

PROBLEMS OF SOLAR-TERRESTRIAL PHYSICS

(International Symposium in Leningrad)

[Article by Candidate of Physical and Mathematical Sciences I. A. Zhulin and Yu. M. Nikolayev, Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 40, No 11, November 1970, pp 109-115]

Solar-terrestrial physics is the science of those physical processes in interplanetary and circumterrestrial cosmic space, caused by solar activity, which are manifested in the polar aurorae observed on earth, perturbances of the ionosphere and the geomagnetic field, in variations of the conditions of the propagation of radio waves and the physical parameters of the upper atmosphere, etc. By the term "solar activity" is understood the totality of non-stationary phenomena on the sun (spots, chromospheric flares, perturbed regions in the corona, etc) which lead to changes of the electromagnetic (roentgen or ultraviolet radiation) and corpuscular radiation of the sun. It is precisely those changes which find reflection in the dynamics of the very complex set of solar-terrestrial relations.

It is possible to reveal the physical regularities in most of the important manifestations of the effect of solar radiation on the earth only in systematic complex cosmophysical investigations. With the gradual intensification of specialization of investigations there arises the danger of "not seeing the forest for the individual trees". International symposia on solar-terrestrial physics in that sense make it possible to form a fairly complete concept of such investigations. A regular symposium was convoked in Leningrad on 11-20 May within the framework of the program of the 13th session of the Committee for Cosmic Space Research (COSPAR). Also participating in the organization of the symposium were the International Astronomical Union, the International Geodetic and Geophysical Union, and the International Scientific Radio Union; its direct preparations were accomplished by the Inter-Union Commission for Solar-Terrestrial Physics under

NIKOLAYEV, Yu. M.

MEDICINE

USJPRS 54538

23 Nov 71

UDC: 616.381-002-07,616.37-07

PATHOHISTOLOGICAL AND HISTOCHEMICAL INVESTIGATION OF THE PANCREAS AS RELATED TO PERITONITIS

[Article by Prof Yu. M. Nikolayev, Institute of Human Morphology, USSR Academy of Medical Sciences, Moscow, Moskva, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 10, 1971, pp 88-93]

Clinical observations and morphological investigations are indicative of the considerable incidence of involvement of the pancreas in the general inflammatory process in the presence of diffuse forms of peritonitis (S.S. Vayl'; A.F. Kisliyev; N.I. Leporskiy; V.M. Voskresenskiy; N.A. Bozhnovol). However, the essence of many functional and structural disturbances arising in this gland and their significance in the pathogenesis of development of local changes and of the general pathological process have still not been investigated sufficiently.

We made a pathohistological and histochemical investigation of the pancreas in the presence of peritonitis on material used in 22 experiments performed on dogs. Experimental peritonitis was induced in the animals by intraperitoneal administration of a 30% fecal suspension at the rate of 0.5 mg/kg or of a bacterial culture (in doses of 5 to 65 billion bacterial bodies per kg of body weight) incubated under aerobic or anaerobic conditions. No specific treatment was given to the animals. A control series of experiments involved six clinically healthy dogs who were sacrificed (under superficial sodium pentothal anesthesia), by resecting the heart against a background of acute bloodletting through the carotid artery. Immediately after death, pieces of tissue were cut out of different segments of the pancreas. The material was fixed in 10% neutral formalin and Carnoi's fluid. In addition, quick-frozen sections were prepared in a cryostat for investigation of the activity of several enzymes.

Paraffin and celloidin sections were stained with hematoxylin-eosin, picrofuchsin-fuchselin, azan by the Haidenhain method; in sections the PAS-reaction with amylase control, nucleoprotein reaction by the methods of Brachet and Feulgen with ribodeoxyribonuclease control were conducted. The functional activity of acinar and β-cells of the pancreas was studied on sections stained with basic brown combined with light green by the method of M.G. Shubich;

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UDC: 621.319.4(088.8)

BELYAKHIN, I. K., BONDARCHUK, G. M., NIKOLAYEV, Yu. V., ZHUK, V. N.

"A Device for Winding the Sections of Capacitors"

USSR Author's Certificate No 266956, filed 9 Aug 68, published 8 Jul 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V379 P)

Translation: This Author's Certificate introduces a device for winding capacitor sections. The device contains a mandrel-turning mechanism, tape-dressing and winding mechanisms equipped with bobbins, and a braking mechanism. As a distinguishing feature of the patent, the device is designed to reduce the number of tears and "run-off" of the wound tape by fitting each of the above-mentioned winding mechanisms with a spiral band spring with one end fastened to the flange support of the winding bobbin, and the other end fastened to the braking pulley support. The flanged sleeve and braking pulley are fitted with stops which interact with each other within the limits of total uncoiling of the spring.

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USSR

UDC 542.91:547.722

NIKOLAYEVA, A. P., MATYUSHIN, YU. N., PEPEKIN, V. I., SMELOV, V. S., VOLIDOROV, V. V., BULIDOROVA, T. I., and APIN, A. YA., Institute of Chemical Physics, Acad. Sc. USSR

"Synthesis and Study of the Detonation Properties of 3-Methyl-4-nitrofuroxane"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 4, Apr 72, pp 965-967

Abstract: A safe and simple synthesis of 3-methyl-4-nitrofuroxane (MNF) has been developed. The synthesis is based on the reaction of sodium nitrite mixed with H_2SO_4 with a solution of metacrylic acid in dichloroethane at 50°. MNF can also be obtained in a 24% yield from a mixture of acetone, nitroacetone, and nitropropylene treated with a mixture of nitrogen tetroxide and nitric acid. Experimentally the thermochemical and detonational properties of MNF have been determined: heat of combustion ΔH°_{comb} - 403.7 ± 0.2 kcal/mole; enthalpy of the formation of MNF ΔH°_f 24.1 ± 0.2 kcal/mole. The detonation rate with a 1.60 g/cm3 density of the charge was found to be $D_{1.6}$ = 7450 m/sec. With charge densities 0.64 and 1.64 g/cm3 the heats of explosive detonation of MNF were 1180 and 1330 kcal/kg respectively. MNF is a crystalline material, m.p. 67-68°; it has high thermal stability and can be recrystallized from hot water.

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1/2 020 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--BROMINATION OF SOME O-DERIVATIVES OF ALDOXIMES -U-

AUTHOR-(03)-KAMAY, G.KH., NIKOLAYEVA, A.D., PEREKHODKO, V.S.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(2), 225-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BROMINATED ORGANIC COMPOUND, OXIME, MOLECULAR STRUCTURE, IR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0176 STEP NO--UR/0153/70/013/002/0225/0229

CIRC ACCESSION NO--AT0132453

UNCLASSIFIED

2/2 020 UNCLASSIFIED

CIRC ACCESSION NO--AT0132453 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ACID BROMIDE OF O-PROPYL BUTYROHYDROXAMATE, PRCBR-NOPR, (I) IS PREPD. IN 65PERCENT YIELD BY STIRRING 13.7 G PRCH:NOPR IN 50 ML CCL SUB4 WITH 17 G BR IN 20 ML CCL SUB4 UNTIL THE MIXT. IS DECOLORIZED. AFTER 8 HR, THE TWO PHASE MIXT. IS NEUTRALIZED WITH AQ. NAHCO SUB3, AND WORKED UP. THE FOLLOWING COMPOS. ARE SIMILARILY PREPD. IN 52-70PERCENT YIELD, WHERE R AND R PRIME1 IN THE FORMULA RCBR-NOR PRIME1 ARE: ME AND PHCH SUB2 (II), ET AND PR, ET AND BU, ET AND ISOAMYL, PR AND ET, AND PR AND PHCH SUB2. HYDROLYSIS OF II WITH 12PERCENT HCL BY BOILING FOR 2 HR., FOLLOWED BY WORK UP, WITH SATO. AQ. KOH GAVE PHCH SUB2 ONH SUB2. TREATMENT OF I WITH NAOET-ETOH GIVES PRC(OET):NOPR IN 71PERCENT YIELD, D PRIME20 0.8941, N PRIME20 SUBD 1,4320. THE STRUCTURE IS CONFIRMED BY IR SPECTRA. FACILITY: KAZAN. KHIM.-TEKHNOL. INST. IM. KIROVA, KAZAN, USSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECT OF THE NATURE OF SUBSTITUENTS ON THE FORMATION OF A SYONONIMINE RING -U-

AUTHOR-(03)-MUKHAMETSHIN, F.M., FRIDMAN, A.L., NIKOLAYEVA, A.D.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (1), 125

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SUBSTITUENT, IMINE, ORGANIC NITRO COMPOUND, HETEROCYCLIC BASE COMPOUND, CYANIDE, HYDROLYSIS, CHEMICAL REACTION MECHANISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0744 STEP NO--UR/0409/70/000/001/0125/0125

CIRC ACCESSION NO--AP0119651

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119651

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. (O SUB2 N) SUB3 CCH SUB2 N(NO)CH SUB2 CH (I), M. 59-60DEGREES, AND (O SUB2 N) SUB2 C(CH SUB2 CH SUB2 N(NO)CH SUB2 CN) SUB2 (II), WERE PREPD. AND REACTED WITH HCL IN MEOH AT ODEGREES. THUS, II GAVE BISSYDNONIMINE (III), M. 217-18 (DECOMP.); WHERE I GAVE (O SUB2 N) SUB3 CCH SUB2 N(NO)CH SUB2 C(OME):NH.HCL (IV), M. 88-90DEGREES (DECOMP.). HYDROLYSIS OF IV GAVE (O SUB2 N) SUB3 CCH SUB2 N(NO)CH SUB2 CO SUB2 ME (V), M. 41-2DEGREES, WHICH WAS CONVERTED TO THE CORRESPONDING N,NITRO ACID (VI) VIA HNO SUB3 OXION, OF THE ESTER (V).

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--REACTION OF TETRAFLUOROHYDRAZINE WITH UNSATURATED NITRO COMPOUNDS -U-

AUTHOR-(04)-FOKIN, A.V., NIKOLAYEVA, A.D., STUDNEV, YU.N., PROSHIN, N.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 717-18

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FLUORONITRO COMPOUND, FLUORINATED ORGANIC COMPOUND, HYDRAZINE COMPOUND, ORGANIC NITRO COMPOUND, CHEMICAL SYNTHESIS, CHEMICAL REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1881 STEP NO--UR/0062/70/000/003/0717/0718

CIRC ACCESSION NO--AP0123669

UNCLASSIFIED

2/2 025 UNCLASSIFIED

CIRC ACCESSION NO--AP0123669 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PASSING N SUB2 F SUB4 35 HR INTO 7.5 G 2,2,DINITRO,4,PENTENE IN MECN AT 70DEGREES UNDER N GAVE 36.4PERCENT F SUB2 NCH SUB2 CRR PRIME1 NF SUB2 (I) (R EQUALS H, R PRIME1 EQUALS CH SUB2 CME(NO SUB2) 2), B SUB0.008 46-8DEGREES, N PRIME20 SUBD 1.4512, D PRIME20 1.52. SIMILARLY WERE PREPD. THE FOLLOWING I (R AND R PRIME1 SHOWN): H, CH SUB2 NO SUB2, B SUB0.04 47DEGREES, N PRIME20 SUBD 1.4403; ME, CH SUB2 NO SUB2, B SUB0.01 50DEGREES, 1.4780; H, CH SUB2 CF(NO SUB2) SUB2, B SUB0.1 65DEGREES 1.4416; H, CH SUB2 CH SUB2 CF(NO SUB2) SUB2, B SUB0.003 56DEGREES, 1.4513; H, CME(NO SUB2) SUB2, B SUB0.001 36DEGREES, 1.4380; AND ME, CH SUB2 CME(NO SUB2) SUB2, B SUB0.001 64DEGREES, 1.4811. THE PRODUCTS WERE RATHER REACTIVE AND UNSTABLE LIQS. ONLY MINOR DECOMPN. TOOK PLACE UNDER THE ABOVE CONDITIONS.

UNCLASSIFIED

Acc. Nr: AP0053450 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code: UR0366

110714e Structure of products of the alkaline alkylation of aliphatic aldoximes. Kamai, G.; Nikoleeva, A. D.; Perekh-od'ko, V. S.; Zykova, T. V. (Kazan. Khim.-Tekhnol. Inst. im. Kirova, Kazan, USSR). *Zh. Org. Khim.* 1970, 6(2), 394-5 (Russ). The basic alkylation of RCH:NOH gave RCH:NOR^1 (syn- and anti-forms by NMR spectroscopy) and the anti-form of RCH:N(O)R^1. CPJR

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REEL/FRAME 19830475

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UDC 615.43:535.242+547.944/945

NIKOLAYEVA, A. G., PROKOPENKO, A. P., and KRIVENCHUK, P. Ye., Zaporozh'ye Medical Institute; Khar'kov Scientific Research Institute of Pharmaceutical Chemistry

"Spectrophotometric Determination of Alkaloids of the β-Carboline Series in the Bark of Elaeagnus Angustifolia"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 6, 1970, pp 708-711

Abstract: The authors describe a spectrophotometric method of determining the amount of 1-methyl-β-carboline (harman) and 1-methyl-1,2,3,4-tetrahydro-β-carboline (tetrahydroharman) in the bark of Elaeagnus angustifolia (the Russian olive). It was found that harman in concentrations of 0.1-1 mg per 100 ml and tetrahydroharman in quantities of 0.5-2.4 mg per 100 ml conform to Bouguer-Lambert-Beer light absorption. The mean relative error of the method lies in the range of ±0.82-±1.05%. The alkaloids were extracted from the plant material by ethanol, and the content of harman and tetrahydroharman was determined after separation by thin-layer chromatography. Experimental studies show that the predominant alkaloid during the budding stage is tetrahydroharman, and that the concentration of this alkaloid then gradually decreases, reaching a minimum in the fruit-bearing stage. The concentration of harman increases toward the end of vegetation.

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1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--BEHAVIOR OF NITROALKYLNITROSAMINES DURING OXIDATION AND NITRATION -U-

AUTHOR-(03)-MUKHAMETSHIN, F.M., FRIDMAN, A.L., NIKOLAYEVA, A.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(5), 928-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMINE DERIVATIVE, OXIDATION, NITRATION, SULFURIC ACID, NITRIC ACID, NITROSAMINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1323 STEP NO--UR/0366/70/006/005/0928/0929

CIRC ACCESSION NO--AP0134997

UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70

C(RC ACCESSION NO--AP0134997

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF UNN(CH SUB2 R) SUB2 (I) WITH 96PERCENT HNO SUB2, HNO SUB2-H SUB2 SO SUB4 MIXT., OR NITROUREA H SUB2 SO SUB4 MIXT. GAVE IS LESS THAN OR EQUAL TO 91PERCENT O SUB2 NN(CH SUB2 R) SUB2 (R IS C(NO SUB2) SUB3, C(NO SUB2) SUB2 CL, C(NO SUB2) SUB2 ME, OR C(NO SUB2) SUB2 CH SUB2 CH SUB2 CO SUB2 ME). I, IN CONTRAST TO UNSUBSTITUTED NITROSAMINES, ARE STABLE TWOARDS CF SUB3 CO SUB3 H.

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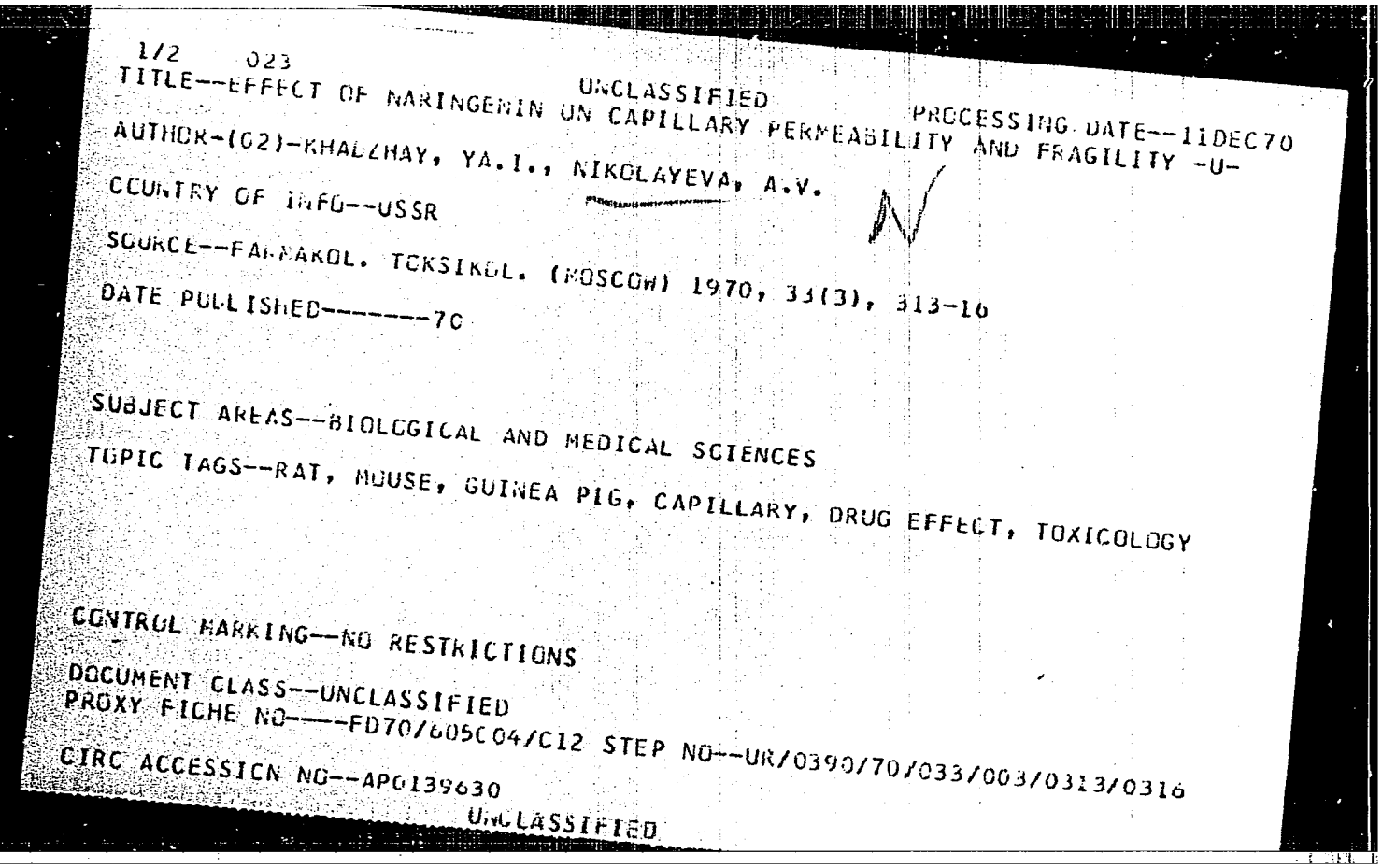

1/2 023 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--EFFECT OF NARINGENIN ON CAPILLARY PERMEABILITY AND FRAGILITY -U-

AUTHOR-(02)-KHALZHAY, YA.I., NIKOLAYEVA, A.V.

COUNTRY OF INFO--USSR

SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, 33(3), 313-16

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--RAT, MOUSE, GUINEA PIG, CAPILLARY, DRUG EFFECT, TOXICOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605C04/C12 STEP NO--UR/0390/70/033/003/0313/0316

CIRC ACCESSION NO--AP0139630

UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0139630

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NARINGENIN (25, 50, OR 100 MG-KG), GIVEN TO RATS, MICE, OR GUINEA PIGS, WAS MORE EFFECTIVE THAN SIMILAR DOSES OF NARINGIN IN IMPROVING CAPILLARY PERMEABILITY AND STRENGTHENING CAPILLARY WALLS. THE LD SUB50 OF NARINGENIN FOR MICE WAS 355 MG-KG, AND OF NARINGIN WAS 562 MG-KG. FACILITY: LAB. OBSHCH. FARMAKOL., KHARKOV. NAUCH.-ISSLED. KHIN.-FARM. INST., KHARKOV, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--NEW NATURAL INTERMETALLIC TIN, ANTIMONY AND COPPER COMPOUNDS -U-

AUTHOR--NIKOLAYEVA, E.P., GRIGORENKO, V.A., GAGARKINA, S.D., TSYPKINA, P.YE.

COUNTRY OF INFO--USSR

SOURCE--ZAP. VSES. MINERAL. OBSHCHEST. 1970, 99(1) 68-70

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--GEOGRAPHIC LOCATION, CRYSTAL STRUCTURE, X RAY ANALYSIS, ZIRCON, RUTILE, MINERAL DEPOSIT, TIN COMPOUND, ANTIMONY COMPOUND, COPPER COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1093 STEP NO--UR/0000/70/099/001/0068/0070

CIRC ACCESSION NO--AP0105953
UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0105953

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNUSUAL MINERALS WERE FOUND DURING STUDY OF HEAVY CONCS. IN TRIBUTARIES OF THE ELKIAIDAI BROOK (EASTERN END OF THE NORTHERN NURA TAU RIDGE, UZBEKISTAN) IN THE AREA OF SILURIAN ARENACEOUS ARGILLACEOUS FORMATIONS. THEY WERE LIGHT GRAY IRREGULAR NODULAR, AND LAMINAL AGGREGATES WITH INCLUSIONS OF COUNTRY ROCKS. ZIRCON, LEUCOXENE, RUTILE, APATITE, ANATASE, ANDALUSITE, BARITE, CELESTITE, SCHEELITE, AND CINNABAR WERE FOUND TOGETHER WITH THESE NEW MINERALS WHICH MADE 5PERCENT OF THE FRACTION. THE MICROSCOPIC STUDY SHOWED THAT THE AGGREGATES ARE METALLIC SN IN CLOSE ASSOCN. WITH WELL FORMED SMALL CUBIC CRYSTALS OF SOME OTHER MINERAL. THE MACRO AND MICROSCOPIC STUDY, DISPERSION OF REFLECTANCE IN THE VISIBLE REGION, MICROHARDNESS, X RAY STRUCTURAL DATA, AND DATA ON THE COMPN., OBTAINED BY X RAY MICROANALYZER, SHOWED THAT THIS INTERMETALLIC COMPD. IS A NEW MINERAL CALLED STISTAITE. THE STISTAITE WAS IN THE FORM OF SMALL (0.02-0.15 MM) CUBIC CRYSTALS WITH METALLIC LUSTER. IT POSSESSED HIGH REFLECTANCE (81.3PERCENT AT LAMBDA EQUALS 580 MMU) WAS CREAM WHITE, AV. MICROHARDNESS 115 KG-MM PRIME2, AND PARAMETER A EQUALS 4.15 PLUS OR MINUS 0.1 ANGSTROM OF ITS BCC. LATTICE. THE MINERAL CONTAINED 49.4PERCENT SN AND 5.06PERCENT SB. THE STISTAITE CRYSTALS HAD NUMEROUS FINE BLUISH VIOLET INCLUSIONS WITH LOWER REFLECTANCE AND HIGHER HARDNESS THAN STISTAITE. THE CUBIC CRYSTALS OF STISTAITE WERE NATURAL INTERMETALLIC COMPDS. WITH SNSB FORMULA.

USSR

UDC 621.395.5:621.317

DAVYLOV, S. A., NIKOLAYEVA, G. G., SEKNIN, V. G.

"Tests of Units of Apparatus for Long-Distance Service on Automatic Machine for Matrix Tests"

V sb. Metody razrab. radioelektron. apparatury, No 1 (Methods for Development of Radioelectronic Apparatus, No 1), Moscow, 1970, pp 137-141 (from RZh--Elektrosvyaz', No 9, September 1970, Abstract No 9.64.18)

Translation: The paper discusses tests of units of apparatus for long-distance service on an automatic machine for matrix tests. A matrix (8 x 8) of possible nonrecurrent situations, including Q of the failures, is checked on the automatic machine. The failure matrix is processed by the integral method. The coordinates are determined for the center of gravity of an n-dimensional region (n = 8) of trouble-free operation, as well as the projections of the center on the axes, i.e., the optimum values of the parameters and their tolerance. After a choice of the optimum parameters of the units and their tolerances, repeated tests are conducted. The failure situations are printed on a telegraph tape in the form of a group of decimal figures. Interpretation of them makes it possible to determine the character of the failure situations, to evaluate whether the system operates stably (i.e., no point of failure in the area of efficiency of the scheme), to determine correlation dependences,

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USSR

DAVYLOV, S. A., et al., V sb. Metody razrab. radioelektron. apparatury, No 1 (Methods for Development of Radioelectronic Apparatus, No 1), Moscow, 1970, pp 137-141 (from RZh--Elektrosvyaz', No 9, September 1970, Abstract No 9.64.18)

and to predict the probability of reliable operation. As an example, the results are presented of tests of a low-frequency trigger in which six parameters (resistances) varied, broken into eight parts, with three pairs of transistors. Interruptions of the situation were produced at a frequency of 10 Hz. The testing time with one pair of transistors amounted to 7 hours 30 minutes. One illustration. D.B.

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NIKOLAYEVA, G.M.
JPRS 58011
20 Jan 73

UDC: 551.48(100)

THE WORLD'S FRESH WATER RESOURCES

[Article by Professor M. I. L'vovich; Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 42, No 11, November 1972, pp 75-76]

The earth's water resources are composed of stationary water resources and resources renewed in the process of its circulation. The total volume of stationary resources is almost 1.5 billion cubic kilometers, of which the fresh water accessible for use, including ground, lake, and river water and also soil moisture and atmospheric vapor, amounts to 4-5 billion km³, according to our calculations. From these figures it follows that the earth apparently is not poor in fresh water resources. But the needs of mankind are assured only to a small degree through those reserves. The most reliable and constant source is water renewed in the process of such a colossal phenomenon as the water cycle. This is why in counting the fresh water resources the basic method is that of the water balance, which permits quantitatively considering the cycle and its separate elements and also estimating the continuous renewal of fresh water resources.

The concept of water exchange, proposed by us, which characterizes the time taken to replace all the water of a given part of the hydrosphere in the process of circulation, permits revealing important and interesting regularities of that phenomenon (Table 1). The activity of exchange of the saline parts of the hydrosphere-ocean and deep ground waters, the main volume of which are brines, is numbered in thousands of years. On the other hand, comparison of the separate parts of the stationary reserves of the hydrosphere with the corresponding elements of the water balance shows that the fresh water reserves most valuable to people, in the presence of very low stationary reserves, are characterized by an exceptionally dynamic character. Thus the simultaneous reserve of water in the beds of all rivers is very small in comparison with other parts of the hydrosphere and does not exceed 1200 km³ (the volume of all lake waters is

UDC: 551.48 (100)

calculated the river runoff by 5- and 10-degree belts of lati-tude, generalizing for each of them all the available data on river runoff, others (M. I. Budyko, 1956; L. T. Zubenok, 1956, 1970; F. Albrecht, 1961) took as a basis evaporation (if it is deducted from precipitations it is possible to obtain an approximate concept of the river runoff), and a third group (M. I. L'vovich, 1945, 1960, 1964) started from the first compiled (later refined) world maps of river runoff.

All work on the water balance, including the world balance, was formerly constructed on the equation P = R + E (precipitations = runoff + evaporation). That equation created a whole epoch in hydrology, since in the course of 7-8 decades it served as the basis of water-balance investigations of river basins and territories in general, but it reflects the interconnection of only three elements of the water balance and this does not satisfy contemporary science.

Last year in the Institute of Geography of the AS USSR, under the leadership of the author of this article and with the participation of N. N. Dreyer, G. Ya. Karasik, G. M. Nikolayeva and G. M. Chernogayeva, work on the water balance of the continents of the world was completed. The basis of the investigations was the following system of differentiated equations, proposed by us (1959):

$$R = U + S;\ P = U + S + E;\ W = P - S = U + E;$$
$$K_U = \frac{U}{W};\ K_E = 1 - K_U = \frac{E}{W}.$$

where R is the total river runoff; U is the underground and S is the surface (high-water) runoff into rivers, P is the atmospheric precipitations, E is the evaporation, W is the gross wetting of a territory, and K_U and K_E are the coefficients of feeding of rivers by underground waters and of evaporation.

The system of differentiated equations differs from those used earlier by increase in the number of elements of the water balance from 3 to 6, including genetically different parts of the river runoff which are of different practical value and are determinable by analysis of the course of runoff during the year, which permits distinguishing the runoff of underground origin. By means of calculations based on the new equations it is possible to arrive also at a general estimate of the reserves of soil moisture -- an important component of soil fertility.

The water balance of our country has been studied by that method in the Institute of Geography of the AS USSR, in the State Hydrological Institute, and in the institutes of geography of the AS Azerbaydzhan and Georgian SSR. That method has been used in investigations of Romanian, Bulgarian and Yugoslav specialists.

Acc. Nr: AP0047163 N Ref. Code: UR 0246

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikhiatrii, 1970, Vol 70, Nr 2, pp 177-181

MATHEMATICAL PROGNOSIS OF OUTCOMES IN HEMORRHAGIC STROKES WITH THE PURPOSE OF DETERMINING INDICATIONS TO SURGICAL TREATMENT

Gelfand, I. M.; Guberman, S. A.; Izvekova, M. L.; Kandel', E. I.; Lebedeva, N. V.; Lunev, D. K.; Nikolayeva, I. F.; Chebotareva, N. M.

The purpose of the convened study was to elaborate methods of mathematical prognosis in hemorrhagic strokes to define the indications to surgical treatment. The authors analyzed 124 case histories (52 case histories of living patients and 72 case histories of deceased) with hemorrhages into the brain hemisphere, following hypertensive disease and atherosclerosis. In such cases 56 items were considered which were the most significat for prognosing hemorrhagic strokes. Among them were different clinical symptoms and their development during 12 hours after admission to hospitals. An analysis of these items permitted to establish a correct prognosis in relation to survival during the first 5 days with exactness to 95%. The next stage of the study presumes an elaboration of methods for prognosi 5 of hemorrhagic strokes in surgical treatment. This may be of aid in deciding the expediency of operations in each separate case.

REEL/FRAME
19790657

Optical

USSR

N

535.853

YAROSLAVSKIY, N. G., NIKOLAYEVA, I. I.

"New Domestic Spectral Instruments and Prospects for Their Development"

Optiko-Mekhanicheskaya Promyshlennost', No. 4, 1970, pp 10-27.

Abstract: A number of spectral instruments recently introduced in the USSR are described. They include: apparatus for atomic emission spectral analysis in metallurgy, machine building and geology; apparatus for absorption analysis and measurement of reflection spectra used in chemistry, medicine, biology and agriculture; devices for spectral investigations over a broad range of wavelengths (from 2 millimicrons to 1000 microns), as well as high speed and interference spectral devices designed for usage in scientific research. The devices described indicate that by the end of 1970, the Soviet optical industry will be producing the major types of spectral devices used in the areas mentioned. During the next Five-Year Plan period (1971-1975) most of the main trends of development of spectral instruments will be in production in the Soviet Union. One of the main areas of development should be automation of spectral devices. Another important step during the next five years of development will be the usage of new interference methods and the creation of interference spectral devices with improved resolving capacity, light power, speed and reduced dimensions, requiring more

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USSR

YAROSLAVSKIY, N. G., NIKOLAYEVA, I. I., Optiko-Mekhanicheskaya Promyshlennost', No 4, 1970, pp 10-27

complex electronic circuits. Among others, several high speed Fourier spectrometers are to be produced for space and laboratory investigations, as well as small spectrometers with selective amplitude modulation, which are quite effective for physical and chemical investigations. Important problems remaining are further expansion of the spectral area of instruments in the shortwave ultraviolet and particularly in the longwave infrared areas of the spectrum; expansion of the capabilities of existing and proposed spectral devices for the measurement of objects under various conditions; and continuation of rapid development of optical devices in general by the application of new techniques such as holographic and heterodyne methods of spectroscopy using lasers.

1/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--3,5,3 PRIME,5 PRIME,TETRABROMO,2,4,2 PRIME,4 PRIME,TETRAHYDROXYBIPHENYL COMPOSITIONS FOR TREATING VIRAL EYE DISEASES

AUTHOR-(04)-NIKOLAEVA, I.S., KRAFT, M.YA., PERSHIN, G.N., BOGDANOVA, N.S.

COUNTRY OF INFO--USSR

SOURCE--FR. DEMANDE 2,007,474

DATE PUBLISHED--09JAN70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DRUG, EYE DISEASE, PATENT, VIRUS DISEASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1079 STEP NO--FR/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AA0131626

UNCLASSIFIED

2/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0131626

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPD. (TEBROPHEN) AS SUCH OR IN 0.1, 0.25, AND 1PERCENT OINTMENTS IN VASELINE (VASELINE 80, VASELINE OIL 20PERCENT) IS EFFECTIVE IN VIRAL EYE INFECTIONS, INCLUDING VARIOUS FORMS OF HERPETIFORM KERATITIS. HUMAN TESTS SHOWED RELIEF IN 3-5 DAYS AND CURE IN 10-14 DAYS. TEBROPHEN IS ALSO EFFECTIVE IN OTHER VIRAL INFECTIONS. FACILITY: CROZHGNIKIOZE, S., ALL UNION SCIENTIFIC RESEARCH CHEMICAL PHARMACEUTICAL INSTITUTE.

UNCLASSIFIED

USSR

UDC 621.372.832.8

LEBED', B. M. and NIKOLAYEVA, K. S.

"Multi-Branch Tunable Circulators"

Elektron. tekhnika. Nauch.-tekhn. sb. Ferrit. tekhn. (Electronics Technology. Scientific-Technical Collection of Articles. Ferrite Technology), 1971, vyp.4 (31), pp 80-93 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B148)

Translation: In a quasistatic approximation, the authors obtain the scattering matrix of an n-branch, symmetric inductance compound which has been applied onto a ferrite resonator. Conditions have been formulated for the application of the compound onto the resonator for instances of $n = 3$ and $n = 4$. The scattering matrix elements are determined for three and four arm circulators. Approximate relationships are obtained which are suitable for engineering calculations. It is possible to retune the working frequency of the circulators in the frequency range with 2:1 overlapping. The calculated results are verified by experimental data. Original article: six illustrations and six bibliographic entries. Resume.

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USSR

UDC 621.372.832.8

NIKOLAYEVA, K. S. and LEBED', B. M.

"Optimal Characteristics of Y-Circulators Based on LC-Elements"

Elektron. tekhnika. Nauch.-tekhn. sb. Ferrit. tekhn. (Electronics Technology. Scientific-Technical Collection of Articles. Ferrite Technology), 1971, vyp. 4(31), pp 65-79 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 B150)

Translation: The authors formulate the conditions for the optimization of the electric and design parameters of Y-circulators based on LC-elements. Optimal relationships are obtained among the parameters of the ferrite cores from the point of view of minimizing introduced errors. Analytical formulas are derived for calculating introduced errors, working frequency bands, the parameters of the LC-elements, and the conditions for the temperature stabilization of the electric characteristics of circulators. The results of the calculations are presented in the form of graphs which are experimentally supported. Original article: four illustrations, two tables, and 16 bibliographic entries. Resume.

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USSR UDC: 621.372.832.8(088.8)

DEBEL', B. M., NIKOLAYEVA, K. S.

"A Y-Circulator Based on Lumped Reactive Elements"

USSR Author's Certificate No 281580, filed 28 Dec 67, published 30 Nov 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B185 P)

Translation: The proposed Y-circulator based on lumped reactive elements contains a central strip made in the form of an inductance coil encompassing ferrite discs, grounded covers and magnets. To improve electrical characteristics, the coils are made in the form of thin foil frames forming a connection of the "star" type with the common point connected to brass discs which form a series capacitance between the coils and the grounded covers.

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USSR

UDC: 621.372.832.8

LEBED', B. M., NIKOLAYEVA, K. S.

"A Y-Circulator Based on Lumped Reactance Elements"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 29, 1970, Soviet Patent No 281580, Class 21, filed 28 Dec 67, p 62

Abstract: This Author's Certificate introduces a Y-circulator based on lumped reactance elements. The device contains a central section made in the form of inductance coils which surround ferrite discs. Also incorporated in the installation are grounded covers and magnets. As a distinguishing feature of the patent, the electrical characteristics of the circulator are improved by making the coils in the form of thin foil frames which form a star connection with the common point connected to brass discs making a capacitance in series between the coils and the grounded covers.

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USSR

UDC 615.221:547.857.47.011.5

GUTOROV, L. A., NIKOLAYEVA, L. A. and GOLOVCHINSKAYA, YE. S., All-Union Scientific Research Chemical and Pharmacentical Institute imeni Sergo Ordzhonikidze, Moscow

"Syntheses in the Purine Series. Report 28. The Role of Phosphorus Pentachloride in the Transformation Reaction of Theobromine or 8-Chlorotheobromine into Respective 2,6-Dichloropurines.

Moscow, Khimiko-farmatsevticheskiy Zhurnal, Vol 5, No 12, Dec 71, pp 17-20

Abstract: This study concerns the transformations of adducts (I, II) which were formed in the reaction of theobromine (III) or 8-chlorotheobromine (IV) with phosphorus oxychloride when treated with phosphorus pentachloride. It is noteworthy that 2,8-dichlotheobromine (V) is capable of addition of not only phosphorus oxychloride or phosphorus pentachloride to form adducts II or a new adduct -- a,6,8-trichloro-3,7-dimethyldihydropurine tetrachlorphosphate (VII) but also phosphorus pentachloride. In this case a new adduct is formed in which $OSbCl_4$ (IX) is the anion. It reacts with alcohol and is transformed to the ethoxyderivative (X). The position of the ethoxygroup is confirmed by the formation of 6-ethoxy-8-chlorotheobromine as a result of hydrolysis. The basic transformational stages of III and IV to

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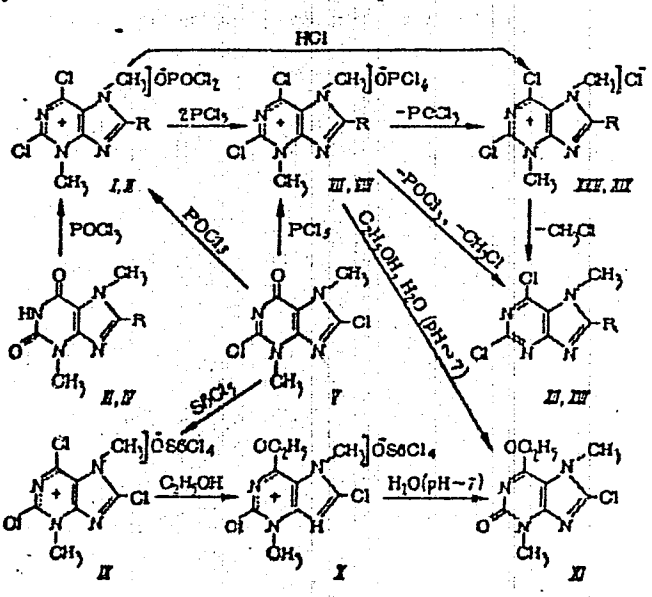
USSR

GUTOROV, L. A., et al, Khimiko-farmatsevticheskiy zhurnal, Vol 5, No 12, Dec 71, pp 17-20



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I, III, VIII, XIII, XIX: R = H II, IV, VII, XII, XVIII: R = CL

USSR

GUTOROV, L. A., et al, Khimiko-farmatsevticheskiy zhurnal, Vol 5, No 12, Dec 71, pp 17-20

their respective 2,6-dichloropurines are detailed and the intermediate compounds identified. The experimental results are believed to have significant potentials for the synthesis of new purine derivatives. (3 biblio. reference)

3/3

Immunology

USSR

UDC 617-001.28-092.9-06:616.927-085.371-032:611.3

TUMANYAN, M. A. and NIKOLAYEVA, L. A. Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

"Enteral Vaccination of Irradiated Mice with Heated Typhoid Vaccine"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 47, No 6, Jun 70, pp 28-31

Abstract: The effectiveness of enteral vaccination was studied when the organism was most susceptible to infection. Mice weighing 18-20 g were irradiated with gamma-rays in a dose of 517 r. A total of 40-50% of the animals died within 30 days of irradiation. Typhoid vaccine was injected into the animals on three successive days. Immunity was tested seven days after vaccination. It was found that the immunity of the animals which was reduced by irradiation was restored by vaccination. When the irradiation doses was greater, no such positive changes were observed. The effectivenss of enteral vaccination depends on the irradiation dose and the time period between irradiation and vaccination.

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1/2 028 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--CONCERNING THE ENTERAL VACCINATION OF THE IRRADIATED MICE WITH HEATED TYPHOID VACCINE -U-

AUTHOR-(02)-TUMANYAN, M.A., NIKOLAYEVA, L.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR 6. PP 28-31

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TYPHOID FEVER, VACCINATION, RADIATION BIOLOGIC EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0403 STEP NO--UR/0016/70/000/006/0028/0031

CIRC ACCESSION NO--AP0126158

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0126158

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DATA PRESENTED IN THIS PAPER INDICATE THAT ENTERAL VACCINATION WITH TYPHOID VACCINE AFTER RADIATION INJURY OF THE ORGANISM PROMOTED RESTORATION OF REDUCED NATURAL RESISTANCE. THE EFFICACY OF ENTERAL VACCINATION DEPENDED ON THE IRRADIATION DOSE AND THE TIME INTERVAL BETWEEN THE IRRADIATION AND THE COMMENCEMENT OF VACCINATION. FACILITY: INSTITUT EPIDEMIOLOGII I MIKROBIOLOGII IM. GAMALEI AMN SSSR, MOSKVA.

UNCLASSIFIED

USSR

UDC 577.1:615.7/9

LAZUR'YEVSKIY, G. V. and NIKOLAYEVA, L. A.

"Cannabinoids (Narcotic Substances from Hemp)"

Kannabinoidy (Narkoticheskiye veshchestva konopli) (cf. English above), Kishinev, "Shtiintsa", 1972, 68 p, ill, 40 k (from RZh-Biologicheskaya Khimiya, No 24, Dec 72, Abstract No 24 F 2232 K)

Translation: The book consists of the following chapters: narcotic substances; hemp and hashish; specific substances from hemp -cannabinoids; methods of finding hashish and its phenol components; isolation of individual cannabinoids and hashish; physiological properties of hashish and cannabinoids; psychochemistry and pharmacology (advances and prospects).

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USSR

UDC 621.315.592:546.28

RYZHIKOV, YU.T., NIKOLAYEVA, L.G.

"Electron Microscope Investigation Of Radiation Distrubances In Silicon Irradiated By Fast Neutrons"

V sb. Radiatsion. fiz. nemet. kristallov (Radiation Physics Of Nonmetal Crystals--Collection Of Works), Minsk, Nauka i tekhn., 1970, pp 53-56 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B71)

Translation: The data are presented of an electron microscope investigation of the microstructure of irradiated Si. The results are discussed on the basis of theories current in this field. 2 ill. 11 ref. Summary.

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UDC 621.3.048

USSR

BORISENKO, A. I., NIKOLAYEVA, L. V., GOVOROVA, R. M., KHASHKOVSKIY, S. V., and RUDYUK, V. YA.

"Flexible Inorganic Electrically Insulating Coatings"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 45, No 10, Oct 72, pp 2258-2261

Abstract: Flexible inorganic electrically insulating coatings are prepared from drosses in which a semicolloidal nitrate solution serves as the dispersion medium. In the process of thermal treatment such solutions decompose yielding a glassy binding and volatile components. Such coatings have many useful properties: excellent flexibility, stability against heat and high dielectric properties at 1000°. Glass-ceramic coatings are fixed durably on nickel, Nichrome, chromel, Alumel, Copel, platinum, tungsten, and tungsten-rhenium wires, the process of depositing and fixation being very simple, capable of continuous operation.

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Acc. Nr: AP0038058 N Ref. Code: UR 0326

PRIMARY SOURCE: Fiziologiya Rasteniy, 1970, Vol 17, Nr 1, pp 5-13

VARIATION OF THE PIGMENT COMPOSITION AND STRUCTURE OF CHLOROPLASTS INDUCED BY CHLORAMPHENICOL

M. K. NIKOLAYEVA, M. P. VLASOVA, O. P. OSIPOVA

K. A. Timiriazev Institute of Plant Physiology, USSR Academy of Sciences, Moscow

In developing young bean leaves low concentrations of chloramphenicol inhibit chloroplast protein synthesis and lower the amount of green pigments and to a lower extent, the amount of yellow ones. The drop in chlorphyll content was mainly due to decrease of chlorophyll a content. The chlorophyll a remaining in the plants was less photo-stable compared to that in the control plants. Electron microscopic studies did not reveal any violation of differentiation of the chloroplast membrane system in plants treated with 5 mg/l chloramphenicol. An antibiotic concentration of 100 mg/l resulted in inhibition of development of the stroma lamellae, a slight increase of granum size and change in their arrangement. A decrease of chloroplast stroma density is also observed at all concentrations but was most pronounced at 100 mg/l of chloramphenicol. The possibility of the fine structure of the chloroplast membrane being altered as a result of absence of part of the protein or pigments is discussed.

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REEL/FRAME
19731102

NIKOLAYEVA, M. Ya.

JPRS 55320
1 Mar 72

UDC: 616.36-089.873-07:616.36-003.
93-02:615.277.4:582.825.123

MECHANISM OF ACTION OF APHLATOXIN ON REGENERATED HYPERTROPHIC LIVER FOLLOWING PARTIAL HEPATECTOMY

[Article by A.A. Pokrovskiy, M.Ya. Nikolayeva, N.V. Loshneva, A.M. Gapparov, A.I. Sadchikova, K.A. Krovnikov, N.N. Arapova, Institute of Nutrition, USSR Academy of Medical Sciences, Moscow; Voprosy Meditsinskikh Nauk SSSR, Russian, No 1, 1972, pp 46-56]

Present conceptions about the mechanism of action of aphlatoxins (a group of highly toxic hepatocarcinogenic metabolites of some species of mold fungus) are reflected in several surveys (Wogan, 1968; Reesi A.A. Pokrovskiy; N.V. Loshneva et al., 1972) and experimental articles (Clifford and Rees, 1967; King and Nicholson). To date extensive factual material has been accumulated which suggests that one of the mechanisms of toxic action of aphlatoxins (necrosogenic lesion to the liver, on the one hand, and marked hepatocarcinogenic effect, on the other) consists of interaction between aphlatoxins and liver cell DNA (Clifford and Rees, 1969). It was shown that aphlatoxin, like actinomycin D, forms complexes with the DNA molecule through attachment to adenine and guanine amino groups, so that the pentose-phosphate groups remain unaffected. Such interaction leads to impairment of the transcription process (Lafarge and Frayssinet), i.e. to impairment of DNA-dependent RNA synthesis. The consequence of this disturbance is inhibition of DNA- and RNA-polymerase synthesis which, in turn, is associated with rapid and visible suppression of hepatic DNA and RNA synthesis. The latter is demonstrable in particular in the case of a regenerated hypertrophic liver (DeNecondo et al., 1968, 1969).

Some authors observed injury to the ribosomal system, consisting of breakdown of polysomes and change in their profile (Pong and Wogan, 1968). For this reason one would have expected aphlatoxin to suppress protein synthesis. This was confirmed in in vitro experiments (Smith; Clifford and Rees, 1967). Yet in vivo experiments failed to demonstrate distinct changes in incorporation of labelled precursors in the rat's liver proteins following administration of aphlatoxin (Shank and Wogan). In addition, it was possible to demonstrate aphlatoxin induced blocking of hormonal and substrate induction of some enzymes (Wogan and Friedman; Pong and Wogan, 1966).

1/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--ORGANOBORON COMPOUNDS. 197. REACTIONS OF TRIALLYBORON WITH ALPHA,BETA,UNSATURATED ALDEHYDES -U-

AUTHOR-(03)-TERSARKISYAN, G.S., NIKOLAYEVA, N.A., MIKHAYLOV, B.M.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (4), 876-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANOBORON COMPOUND, ALDEHYDE, CYCLIC GROUP, BORATE, ACROLEIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1012 STEP NO--UR/0062/70/000/004/0876/0879

CIRC ACCESSION NO--AP0134724

UNCLASSIFIED

2/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134724

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EQUIMOLAR MIXT. OF B(CH SUB2 CH:CH SUB2) SUB3 AND RCHO IN ET SUB2 O HELD 0.5-1.5 HR GAVE 65-73PERCENT RCH(OH)CH SUB2 CH"CH SUB2 (R SHOWN): CH SUB2:CH, B SUB15 40-10DEGREES, N PRIME20 SUBD 1.4472; MECH"CH, B SUB15 61-2.5DEGREES, 1.4540; PHCH:CH, B SUBOTIMES025 85-7DEGREES, 1.5650, ME SUB2 C:CHCH SUB2 CH SUB2 CME:CH, B SUBOTIMES4 102DEGREES, 1.4800; 2,6,6,TRIMETHYL,2,CYCLOHEXENYL (II), B SUB2 103-4DEGREES, 1.4950; AND 2,6,6,TRIMETHYL,2,CYCLOHEXNYL (II), B SUB2 62-4DEGREES, 1.4880. THIS REACTION WITH ALPHA CYCLOCITRAL IN REFLUXING C SUB6 H SUB6 3 HR, FOLLOWED BY TREATMENT WITH AQ. HOCH SUB2 CH SUB2 NH SUB2 GAVE 19PERCENT TRIS(4,(2,6,6,TRIMETHYL,2,CYCLOHEXEN,1,YL)BUTEN,1,YL) BORATE B SUBOTIMES02 222-4DEGREES, 1.5020, AND 28PERCENT II. BETA CYCLOCITRAL IN A SIMILAR REACTION AT ROOM TEMP. 1 DAY GAVE TRIS(4,(2,6,6,TRIMETHYL,1,CYCLOHEXENYL)BUTEN,1,YL) BORATE, B SUBOTIMES03 235-6DEGREES, 1.5030, ALONG WITH SOME 17PERCENT I. ACROLEIN AND B(CH SUB2 NEGATIVE,CH:CH SUB2) SUB3 IN ET SUB2 O 1 DAY GAVE 83PERCENT (CH SUB2:CHCH(CH SUB2 CH"CH SUB2)O) SUB2BCH SUB2 CH:CH SUB2, B SUB4 87-9DEGREES, 1.4530. FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, USSR.

UNCLASSIFIED

USSR

UDC: 51

NIKOLAYEVA, N. D.

"On a Stochastic Programming Problem"

Moscow, Mat. metody resheniya ekon. zadach--sbornik (Mathematical Methods of Solving Economics Problems--collection of works), No 3, "Nauka", 1973, pp 52-58 (from RZh-Kibernetika, No 5, May 73, abstract No 5V664 by S. Zhak)

Translation: Slight modifications of processes described in a previous paper by the author (RZhMat, 1973, 2V505), being an extension of stochastic approximation procedures to problems with limitations (the problem of stochastic mathematical programming with a deterministic region of permissible values of variables and minimization of the mathematical expectation of the random target function). Detailed proofs are given on the convergence of the constructed processes.

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USSR

UDC 621.396.6.002.621.793

KUMLEVA, L. A., NIKOLAYEVA, N. M., KOROLEV, A. L., MAKEYEVA, Ye. D., LEVCHENKO, D. N., ABAKUMOVA, G. S., LIPOVSKAYA, N. I.

"Lubricating Grease"

USSR Author's Certificate No 253981, Filed 27 Jul 68, Published 26 Feb 70 (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V295 P)

Translation: The authors propose a lubricating grease based on a dispersion medium thickened with silica gel, to which liquid polyoxyalkyleneglycol is added as the dispersion medium. In order to loosen and remove oxide films from metals, polyatomic phenol is added to the lubricant in quantities of 0.1-10%, silica gel is used in quantities of 5-15%, and liquid polyoxyalkyleneglycol -- 95-85%.

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UDC: 518.5:681.3.06

USSR

NIKOLAYEVA, N. S.

"Calculation of a Three-Dimensional Magnetostatic Field in Piecewise-Homogeneous Media With the Aid of the Potential of a Simple Layer"

V sb. Mat. obespecheniye avtomatizir. sistem proyektir. elektro- i radio-tekhn. ustroystv (Software for Automating Systems for Design of Electronic and Radio Equipment), vyp. 3, Kiev, 1970, pp 101-148 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V853)

Translation: The calculation reduces to a boundary-value problem of mathematical physics which is formulated in turn as a system of integral equations. The corresponding algorithm and program for the M-20 digital computer are described. The field of two steel cores and two coils with currents is calculated by way of example. The field is calculated at 57 points outside the surface of the steel bodies and in the center of each flat area on the surface of the bodies. V. Mikheyev.

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1/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECT OF ZINC SULFATE ON THE FORMATION AND PROPERTIES OF A POLYNOSIC FIBER -U-

AUTHOR-(04)-BOCHKINA, V.S., NIKOLAYEVA, N.S., MOGILEVSKIY, YE.M., MIKHAYLOV, N.V.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VOLOKNA 1970, (2), 46-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ZINC COMPOUND, SULFATE, COAGULATION, SYNTHETIC FIBER, TENSILE STRENGTH, ELONGATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0832 STEP NO--UR/0183/70/000/002/0046/0049

CIRC ACCESSION NO--AP0124499

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124499

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INCREASE OF ZNSO SUB4 CONCN. FROM 0-0.6 G-L. IN THE COAGULATING BATH INCREASES THE POLYNOSIC FIBER TENSILE STRENGTH AT BREAK (SIGMA) AND ITS ELONGATION AT BREAK (EPLISON). THE CONTINUING INCREASE OF ZNSO SUB4 CONCN. ABOVE 6 G-L. LEVEL DECREASES SIGMA BUT INCREASES EPLISON. THE ADDN. OF 1.5PERCENT (ON ALPHA CELLULOSE) POLY(ETHYLENE GLYCOL) MODIFIER TO THE VISCOSE HAS NO EFFECT ON THE CHANGES OF EPLISON AND SIGMA WITH ZNSO SUB4 CONCN. THESE EFFECTS ARE ASSOCD. WITH PH CHANGES OF THE COAGULATING BATH AND THE CHANGED CONCNS. OF ZNS AND ZNSO SUB4.

UNCLASSIFIED

USSR

UDC 615.371:576.858.21].072

MAD'YAROVA, R. S., NIKOLAYEVA, N. V., MOROGOVA, V. M., and GIL'DINA, S. S., Ufa Scientific Research Institute of Vaccines and Sera imeni I. I. Mechnikov

"Determination of Specific Antirabies Vaccine Activity by the Degree of Antibody Adsorption"

Moscow, Voprosy Virusologii, No 1, 1973, pp 77-82

Abstract: The long testing time and variability involved in the Habel and NIH methods for determining immunogenicity of antirabies vaccines necessitated development of a new method employing antibody adsorption by the vaccine. Antibody adsorption was found to be optimum when a mixture of vaccine and gamma-globulin was kept at 4°C for 20 hours followed by 1 hour at 37°C, or at 37°C for 3 hours. Immunogenicity of Moskva strain and CVS standard virus vaccines was tested by this method in comparison with a reference vaccine. No significant differences were found. Next the 3 methods were compared in tests with Fermi vaccine. Variation in the revealed immunogenicity was statistically insignificant. Thus use of the new method is recommended, particularly because it requires half the testing time needed for the Habel and NIH methods.

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USSR

UDC 616.988.25-022.395.42-097.5

NIKOLAYEVA, S. P., VERETA, L. A., and IVANOVA, I. P., Department of Natural Focal Infections, Khabarovsk Scientific Research Institute of Epidemiology and Microbiology

"Duration of Antibody Preservation and Their Relationship to Gamma- and Beta-Globulin Fractions in Blood Serum of Individuals Who Had Suffered Various Forms of Tick-Borne Encephalitis"

Moscow, Zhurnal Nevropatologii i Psikhiatrii imeni S. S. Korsakov, Vol 73, Vyp 2, 1973, pp 188-191

Abstract: Immunological tests were made on blood sera of 68 individuals who had suffered various forms of tick-borne encephalitis (meningeal, focal, obliterative) 1-7 years prior to the study to determine antibody persistence. Complement-fixing antibodies were found to persist 1-3 years at a uniform level, after which time they disappeared, and were more frequently encountered with the obliterative form. Antihemagglutinins and virus-neutralizing antibodies persisted beyond the time of observation irrespective of the form of disease. In early stages (6 months to 1 year) all of these elements were detected in both gamma- and beta-globulin fractions. After 2-7 years complement-fixing antibodies were not detected, while antihemagglutinins and virus-neutralizing antibodies were encountered most frequently in the gamma-globulin fraction.
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USSR

UDC 576.858.75.098.396.332

ZAYDES, V. M., NIKOLAYEVA, O. G., SELIMOVA, L. M., and BUKRINSKAYA, A. G., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"The Role of Sendai Virus Nucleocapsid in Transcription of Viral RNA"

Moscow, Voprosy Virusologii, No 5, Sep/Oct 72, pp 602-608

Abstract: Sendai virus RNA-polymerase catalyzes incorporation of ribonucleoside triphosphates into an acid-insoluble material in vitro. The incorporation is linear for at least an hour. A portion of the synthesized substance is attached to the nucleocapsid. The bond is specific, and as soon as the growing chain matures into RNA, the molecule becomes free and leaves the structure. Similarly, virus RNA-polymerase promotes synthesis of virus specific RNA in Ehrlich ascites carcinoma cells very soon after these cells are infected with Sendai virus, and RNA transcription occurs in structures resembling virus nucleocapsid. It is concluded that Sendai virus nucleocapsid participates in transcription of virus RNA in vitro and in vivo.

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UDC 616.981.452.001.5(47+57)

NIKOLAYEV, N. I., All Union Scientific Research Antiplague Institute "Mikrob," Saratov

"Achievements of the Soviet Public Health Service in the Investigation and Prevention of Plague"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 12, 1972, pp 24-29

Abstract: Following World War I, the newly established institute in Saratov (which subsequently became the "Mikrob" Institute) and the reopened 13 prewar antiplague institutes had to cope not only with plague but also with typhus and cholera endemics. Between 1921 and 1926, 135 plague outbreaks in which 941 persons became ill and 813 died were curbed. In 1923, the Mikrob Institute started a systematic scientific investigation of the plague problem, including analysis of the role of rodents, as pioneered by Zabolotnyy in 1899. While data were being collected on plague microbe carriers (both rodents and fleas), on epizootic cycles, and on the ecology of rodents and fleas, new antiplague institutes were established (in Rostov-na-Donu, Irkutsk, Alma Ata, and Stavropol between 1934 and 1952) and contingents of scientific personnel trained. Pavlovskiy's theory about the biocenotic and ecological basis of plague spurred 1/2

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NIKOLAYEV, N. I., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 12, 1972, pp 24-29

major progress in plague epizootiology and identification of hitherto unknown geographic foci. The various types of natural foci were defined and the main carriers (fleas C. tesquorum, N. setosa, Oropsylla silantievi, and Xenopsylla) differentiated from secondary carriers. Among gophers, plague epizootics recur every 5-10 years. They migrate over new areas and eventually return to the initial focus after the gopher and flea population has again reached a high density. Long-term forecasts are made on the basis of this cyclic recurrence, while short-term forecasts are based on the population density of the vectors. However, a plague epizootic remains stationary for 2-3 years among marmots and for 5-16 years with 1-3 year intervals among gerbils. In the northern zone of Central Asian deserts, a plague epizootic is recorded almost perennially, while in the southern zone of the deserts, short-lasting epizootics alternate with long (5-10 and more years) periods during which no plague pathogens can be detected. The most feasible way to break the cycles and thus eliminate plague is to eradicate the vectors. While small-scale measures, including vaccination of people, are currently being implemented by the various antiplague stations, a master plan for total eradication of plague vectors is under preparation.

2/2

USSR UDC 576.851.252.097.29

NIKOLAYEVA, I. S., YEZEPCHUK, YU. V., and BUGROVA, V. I., Institute of Epidemiology and Microbiology imeni Gamaleya, Academy of Medical Sciences USSR, Moscow

"A Method of Isolating Staphylococcus Enterotoxin Type A"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 1, 1973, p 134

Abstract: Enterotoxin type A, whose properties are not yet known in detail and which is a frequent cause of food poisoning, was isolated from Staphylococcus strain 264 grown for 48 hrs at 37°C in a nutrient medium containing amino acids and casein hydrolysate. The culture liquid was centrifuged, and the sediment was heated at 100°C for 30 munutes and then concentrated by freeze-drying. Prior to the tests, the dry material was dissolved in a minimum amount of distilled water, dialyzed, and the volume brought up to one-fifth of the initial culture liquid volume. The crude enterotoxin was then purified through precipitation with 2 volumes of 96% ethanol cooled to 5°C. The minimum toxic dose of the purified preparation contained 3.42-4.29 mg of nitrogen per kg and, after intravenous injection into cats, it produced a marked reaction in all animals, with typical clinical signs of poisoning. In gel diffusion with homologous

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NIKOLAYEVA, I. S., Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 1, 1973, p 134

serum, the preparation yielded three precipitation lines. Electrophoresis in agar revealed three antigens, with two relatively immobile and the third accumulating in the cathode zone of the immunophoregram. Disk electrophoresis in polyacrylamide gel revealed the presence of five components in the preparation. Thus, precipitation with ethanol yields a toxic but unhomogeneous preparation, and further research is necessary in order to isolate homogeneous enterotoxins.

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USSR

UDC 615.281.8:547.678.3

YERMOL'YEVA, Z. V., Academician of the Academy of Medical Sciences USSR, KORNEYEVA, L. Ye., BALEZINA, G. I., NIKOLAYEVA, O. D., GVAZAVA, I. S., and FADEYEVA, L. L., Institute of Virology imeni D. I. Ivanovskiy of the Academy of Medical Sciences USSR and the Chemical Therapy Group of Academician of the USSR Academy of Medical Sciences Z. V. Yermol'yeva

"Tyleron as an Interferon Inductor"

Moscow, Antibiotiki, Vol 18, No 6, Jun 73, pp 517-520

Abstract: In the current investigation the harmlessness, interferonogenic activity, and protective action (against infectious viral diseases) of tyleron hydrochloride were tested by administering the drug to white mice hypodermically and orally and to monkeys orally. It was established that there is no toxic effect from various dosages of tyleron hydrochloride with either method of introduction. A marked interferonogenic action was obtained where tyleron hydrochloride was given to mice in dosages of 5, 10, and 20 mg/kg and where 25 mg/kg were administered to monkeys. Oral administration proved more beneficial, while no difference was found between a dosage given in one part daily and given in three equal parts daily. Combining tyleron and prodigiozan made it possible to cut the dosage of

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YERMOL'YEVA, Z. V., et al., Antibiotiki, Vol 18, No 6, Jun 73, pp 517-520

tyleron in half and increased the titer and length of interferon circulation in the blood by 50%. Tyleron was found to have a marked protective effect for influenza pneumonia in mice, despite low titers of circulating interferon. On the basis of this investigation, tyleron hydrochloride may be recommended as an effective interferon inductor.

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USSR UDC 576.851.553:664.848

NIKOLAYEVA, S. A., and MAZOKHINA, N. N., All Union Scientific Research Institute of the Canning and Vegetable Drying Industry, Moscow

"Propagation of Cl. botulinum Type B in Canned Mushroom Sauce"

Moscow, Voprosy Pitaniya, Vol 31, No 2, Mar/Apr 72, pp 83-86

Abstract: The possibilities of propagation of Cl. botulinum type B in canned mushroom sauce with the composition mushrooms 10%, butter 5%, milk 5%, dried onions 5%, sugar 3%, flour 2%, NaCl 3%, fermentation sauce 0.3%, black pepper 0.08%, citric acid 0.25%, water 65.47% were studied. The pH of the sauce varied in the 4.1-5.0 range. The pH and dose of Cl. botulinum used for infection had a pronounced effect on propagation of the microorganism in mushroom sauce, while enrichment of the sauce with glucose and yeast autolysate had no noticeable effect. Vegetative cells of Cl. botulinum multiplied at pH 4.1-4.35 at a rate which increased by a factor of 2-4 orders of magnitude after the infected sauce had been kept at 37°C for 25 days. Spores of Cl. botulinum multiplied only at pH 5.0 upon addition to the sauce. Botulinus toxin reached maximum titer at pH 4.35, increasing to 550 and 1000 MLD, respectively, for sauce of the initial composition infected with 7×10^7 bacterial cells per gram and sauce enriched with glucose and

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002202220011-9"

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NIKOLAYEVA, S. A., and MAZOKHINA, N. N., Voprosy Pitaniya, Vol 31, No 2, Mar/Apr 72, pp 83-86

yeast autolyzate infected with 3 X 10^7 cells per gram. Upon addition to the sauce of toxin in the form of culture liquid free of Cl. botulinum, the toxin titer diminished gradually during storage of the sauce of 37°C.

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UDC 664.8/.9

USSR

YEMTSEV, V. T., and NIKOLAYEVA, S. A., Moscow Agricultural Academy imeni K. A. Timiryazev

"Some Biological Properties of Clostridium Isolated From Foodstuffs During Canning"

Moscow, Biologicheskiye Nauki, No 12, 1971, pp 92-99

Abstract: Comparative studies of the morphological, cultural and physiological properties of Cl. perfringens with ten other Clostridium species isolated from foodstuffs were conducted. Some of the characteristic properties of Cl. perfringens which distinguish it from other butyric acid bacteria include immobility and reaction to litmus milk at a temperature of 46°C, intensive growth, ability to accumulate nitrites in a medium, rapid growth in the Wilson and Blair medium, specific growth in the Willis and Hobbs medium, and liquefaction of gelatin. In addition, none of the strains of Cl. perfringens fermented mannite or dulcite. Based on these properties, Clostridium perfringens can be isolated from other butyric acid bacteria during microbiological inspection of food products.

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1/2 015 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--A STUDY ON THE COMPLEX OF SOLUBLE PROTEINS IN THE CELLS OF CLOSTRIDIUM PERFRINGENS BY ELECTROPHORESIS IN POLYACRYLAMIDE GEL -U-

AUTHOR-(02)-NIKOLAYEVA, S.A., SAFONOV, V.I.

COUNTRY OF INFO--USSR

SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 87-90

DATE PUBLISHED--------70

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2/2 015 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0109690

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLUBLE PROTEINS WERE STUDIED IN THE CELLS OF 13 STRAINS BELONGING TO CLOSTRIDIUM PERFRINGENS, TYPE A, ISOLATED FROM VARIOUS NATURAL SOURCES AND FROM CANNED FOODS. THE STRAINS OF THE A TYPE WERE SHOWN TO BE POLYMORPHIC WITH RESPECT TO THE COMPOSITION OF ELECTROPHORETIC SPECTRUM OF STUDIED PROTEINS. THE STRAINS COULD BE DIVIDED INTO SEVERAL GROUPS ACCORDING TO THIS COMPOSITION. NO DISTINCT CORRELATION COULD BE ESTABLISHED BETWEEN THE COMPOSITION OF PROTEIN SPECTRUM AND TOXIGENEITY OF THE STRAINS. HOWEVER, GROWTH OF SOME TRAINS IN THE MEDIUM ENRICHED WITH NITROGEN (CASEIN HYDROLYSATE) RESULTED IN A RISE OF TOXIGENEITY AND IN AN APPEARANCE OF NEW PROTEINS.

UNCLASSIFIED

USSR

UDC 547.96:576.851.55

NIKOLAYEVA, S. A., and SAFONOV, V. I., All Union Scientific Research Institute of the Canning and Vegetable-Drying Industry, Institute of Plant Physiology, Academy of Sciences USSR, Moscow

"The Complex of Soluble Proteins in Clostridium perfringens Cells"

Moscow, Mikrobiologiya, Vol 39, No 1, Jan/Feb 70, pp 87-90

Abstract: Thirteen strains of Clostridium perfrignes type A differing from one another in origin and toxigenicity, were investigated by electrophoresis in polyacrylamide gel. A table shows the relative electrophoretic mobility of protein zones in the strains studied. Another table shows the changes in the electrophoretic spectrum of proteins in two strains, depending on composition of the culture medium, with and without hydrolysate. Results of the study showed that strains of the A type were polymorphic with respect to the composition of the electrophoretic spectrum of proteins. The strains could be divided into several groups according to this composition. No distinct correlation could be established between composition of the protein spectrum and toxigenicity of the strains. 1/2

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NIKOLAYEVA, S. A., et al., Moscow, Mikrobiologiya, Vol 39, No 1, Jan/Feb 70, pp 87-90

However, growth of some strains in the medium enriched with nitrogen (casein hydrolysate) resulted in a rise of toxigenicity and in the appearance of new proteins.

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USSR

UDC 632.954:634.11

KLYUYEVA, M. P., NIKOLAYEVA, S. I., and BONDURYANSKAYA, B. I., All-Union Scientific Research Institute of Biological Plant Protection Methods

"The Effectiveness of the Application of Banvel-D in the Garden Against Dicotyledonous Perrenial Weeds"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 6, 1972, pp 48-50

Abstract: The herbicide, produced in the U.S., was tested in bearing apple orchards at the Kishinev school sovkhoz for vineyards and vine culture. The soil was common moderately loamy chernozem with up to 4% humus. A 4 m^2 circle around each tree was treated with 1 liter by hand sprayer. There were 3-4 repetitions of 3 circles each. The toxicity of the herbicide was in direct relationship to its concentration. Dosages of from 1 to 5 kg/ha were tested. Complete kill of dicotyledonous perennial weeds was obtained at dosages of 3 kg/ha and higher, but these dosages also reduced fruit yields and tree growth. Hence 2 kg/ha was chosen as the optimal dosage. Calculation indicated that weed infestation remained low even 2 years after treatment, again in direct relation to the dosage of Banvel-D. There were no adverse effects from the herbicide up to the 2 kg/ha dosage. Some sorts of trees showed stimulated apple growth at the 1 kg/ha dosage, and treated apples also tended to keep somewhat better than those from the control trees.

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USSR

UDC 616.988.25-022.395.42.036.2(571.62)

VERETA, L. A., OBUKHOV, G. D., KOVALEVA, Ye. I., SKVORTSOVA, T. M., MOGILEV, V. Ye. VOROB'YEVA, R. N., NIKOLAYEVA, S. P., KUDAKOVA, T. M., and ROSLYAKOV, G. Ye., Khabarovsk Scientific Research Institute of Epidemiology and Microbiology, Khabarovsk

"Landscape-Epidemiological Subdivision of the Amur Territory With Respect to Tick-Borne Encephalitis"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 42, No 1, Jan/Feb 73, pp 28-32

Abstract: An evaluation of the danger of human infection with tick-borne encephalitis in territorial subdivisions of the Amur region differing with respect to natural characteristics has been carried out on the basis of a number of factors, principally the local density of Ixodid ticks. The index of probability of infection (a product of the ratio of persons who have visited forests by the ratio of those who observed the attachment of ticks by the ratio of ticks infected with the virus of the disease) based on data collected in 1969-71 was used as a criterion. Regions with a high incidence of the disease were located in the zone of coniferous-wide-leaved forests, those with a moderate incidence in the subzone of the southern taygn and in agriculturally developed areas in the zone of coniferous-wide-leaved forests, and those with

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VERETA, L. A., et al., Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, Vol 42, No 1, Jan/Feb 73, pp 28-32

a low incidence in the subzone of the middle tayga. Acute forms of the disease occurred both in regions with a high and a low incidence. The ratio of focal (meningoencephalitic) forms and the index of lethality, which corresponded to this ratio, showed some tendency of increasing from the south to the north.

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NIKOLAYEVA, T. A.

JPRS 55320
1 Mar 72
UDC: 613.31:577.17.0491-074

SOME METHODOLOGICAL APPROACHES TO HYGIENIC INVESTIGATION OF TRACE ELEMENTS IN DRINKING WATER

[Article by Tat'yana Nikolayevna Aleksandrova; Moscow, Vestnik Akademii Meditsinskikh Nauk SSSR, Russian, No 1, 1972, pp 78-81]

There has not been sufficient investigation of the hygienic aspects of the problem of trace elements in drinking water. Yet studies of recent years indicate that a number of trace elements play a substantial part in the vital activities of man and animals. It was established that an excess or shortage of some trace elements in the environment leads to onset of a number of endemic diseases of man and to enzootic disease (A.O. Voynar).

The need for further expansion of hygienic research to assay trace elements in drinking water is determined by many circumstances. The economic development of arid and drought afflicted territories as well as pollution and depletion of open reservoirs in a number of cases lead to increasing use of deep subterranean water for drinking purposes, which often contains higher quantities of trace elements.

In some cases the hydrochemical conditions of reservoirs are altered due to dumping of industrial sewage into them. When evaluating the situation existing in reservoirs, one must take into consideration the fact that modern water supply plants do not provide removal of most substances that are usually referred to the trace element group from the water.

The use of trace elements in agriculture, as fertilizer, for example, boron, molybdenum, copper, and others, is a new source of increased access of such elements into reservoirs.

Considerable quantities of trace elements (boron, bromine, nickel) in unusual proportions may be present in desalinated water used to supply populated communities in dry or drought areas. This is due to the fact that some desalination methods do not completely remove trace elements, or else they get into the water as a result of corrosion of the desalination equipment.

USSR

SEMENOVA, S. A., SIFOROVA, T. A., and NIKOLAYEVA, T. A., VNIIKhSZR

"Dynamics of the Elimination of Residual Systemic Acaricides from Leaf Surfaces"

Moscow, Khimiya v Selskom Khozyaystve, No 2, 1971, pp 24-27

Abstract: Toxic residues of the acaricides remaining for a long time on leaf surfaces are of definite danger to field workers and to bees and various insects which destroy or parasitize mites and other pests. Laboratory and field tests were run on the following systemic acaricides to determine the dynamics of their elimination from leaf surfaces: phosphamide, phythios, antio, vamidotion andmethylmercaptophos. These were found to disappear from leaves in the following order: methylmercaptophos = vamidotion, phythios, phosphamide, antio. The latter three, since they disappear more slowly than the others, represent the greater danger to field workers and to valuable insect life.

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USSR

MAZEL', A. G., POLUZ'YAN, ZH. A., and NIKOLAYEVA, T. I.

"Technological Measures Associated With Pipeline Welding Under Winter Conditions"

Moscow, Stroitel'stvo Truboprovodov, No 11, 1970, pp 31-33

Abstract: The authors present the technological measures for welding pipelines made from complex alloyed steel with a high carbon equivalent and with a wall thickness greater than 15 mm. These measures include: preheating, use of a heat-insulating belt, and increasing linear energy during welding. The following graphs are given: temperature in the weld as a function of cooling time after preheating for various metal thicknesses and the effect of a heat insulating belt on the cooling of a weld. A table is given for the relationship between welding time and number of welders. Diagrams are also given for the temperature distribution along the seam perimeter of 1420-mm-diameter pipes with 17-mm wall during welding using the continuous separation method with UONI 13/55 electrodes and for the volume variation of the molten metal pool as a function of initial temperature. Formulas are derived which make it possible to determine the degree of increase needed in arc output or the decrease in the rate of welding so that the molten metal pool and, consequently, the temperature regime associated with seam formation at negative temperatures will be the same as at positive temperatures (20°C). Original article: four figures, one table, two formulas, and six bibliographic entries.

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Acc. Nr. AP0048459 Abstracting Service: CHEMICAL ABST. 5/70 Ref. Code UR 0449

105548z Optical properties of arsenic sesquisulfide and antimony sesquisulfide single crystals. Valakh, M. Ya.; Nikolaeva, T. N. (Inst. Poluprov., Kiev, USSR). *Fiz. Tekh. Poluprov.* 1970, 4(1), 80–3 (Russ). The reflection and transmission spectra of As_2S_3 and Sb_2S_3 single crystals were investigated in the region of lattice-vibration frequencies. A complex multiresonance nature of the curves related to polyatomicity of the crystal cell was obsd., with a large no. of phonon branches, as a consequence. Some values of the optical-phonon energies agree well with those detd. from edge absorption, for As_2S_3. For As_2S_3 single crystals, a "thickness dependence" of the absorption coeff. was obsd., ascribed to interzone transitions.

Alexandre Fucs

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USSR

UDC 546.882'261+546.831'261

LEYDERMAN, G. M., and NIKOLAYEVA, V. A., Institute of High Temperatures, Academy of Sciences USSR

"Interaction of NbC and ZrC with Ni"

Moscow, Neorganicheskiye Materialy, Vol 9, No 10, Oct 73, pp 1721-1723

Abstract: The interaction with nickel in the region of 20 wt% carbide was investigated in the NbC-Ni and ZrC-Ni systems. Two phases were found in the Ni-NbC system: a solid solution of NbC in Ni and NbC. The solid solution region is characterized by coarse grains while in the two-phase region there is a eutectic whose quantity increases with increased carbide content. The alloy with 9.6% NbC consists totally of the eutectic. The Ni-NbV system is quasi-binary type system with a eutectic transformation temperature of 1330°C with a solubility of NbC in Ni, at this temperature, in the limits of 6.1-66 wt %. Microstructure analysis and the relationship of temperature at the melting point to composition made it possible to assume that a eutectic transformation takes place at 1270°C in the Ni-ZrC system. Appearance of the eutectic was noted in the alloy with 2.7% ZrC. The alloy with 12.2% ZrC is, apparently, hypereutectic since it contains uniformly distributed carbide grains and dark-phase inclusions. Three figures, five bibliographic references.
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USSR

UDC 547.241

MUKHACHEVA, O. A., NIKOLAYEVA, V. G., SHCHELKUNOVA, M. A., and RAZUMOV, A. I.,
Kazan' Chemical Technological Institute Imeni S. M. Kirov

"Studies in the Series of Phosphinic and Phosphinous Acid Derivatives. XCI. O-Alkyl- and O-Acyl- Derivatives of the Phosphorylated Hydroxamic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 6, Jun 73, pp 1240-1247

Abstract: Alkylation and acylation of the potassium salts of dialkyl (diacyl) phosphinylhydroxamic acids yields O-alkyl or O-acyl derivatives of the mother compounds. The structure of the compounds obtained was supported by IR spectral data. Possible reaction mechanisms have been discussed. A series of potassium, silver, cobalt, nickel, and copper salts of O-acyl derivatives of the phosphorylated hydroxamic acids has been synthesized.

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USSR

UDC 547.241

NIKOLAYEVA, V. G., ANISIMOVA, L. V., MUKHACHEVA, O. A., and RAZUMOV, A. I., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Studies in the Series of Phosphinic and Phosphinous Acid Derivatives LXXXIX. Structures and Properties of Phosphorylated Hydroxamic Acids and Their Salts"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 5, May 73, pp 1013-1019

Abstract: A series of phosphorylated hydroxamic acids and salts was synthesized by a previously described method. Physical constants, IR, UV, and PMR data are reported for the new compounds. On the basis of spectral analysis it was shown that the solid phosphorylated hydroxamic acids and their salts are in the amide form $R_2P(=O)(CHX)_nC(=O)NHOH$.

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UDC 547.241

MUKHACHEVA, O. A., NIKOLAYEVA, V. G., and RAZUMOV, A. I., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Rearrangement of Diphenylphosphinylacetohydroxamic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8 Aug 71, pp 1873-1874

Abstract: Using diphenylphosphinylacetohydroxamic acid as an example, the authors studied the Lossen rearrangement, which is characteristic of acyl derivatives of hydroxamic acids. Benzoylation of potassium diphenylphosphinylacetohydroxamate gives benzoyl diphenylphosphinylacetohydroxamate, which on heating in an alkaline aqueous solution undergoes an intramolecular rearrangement with elimination of the carboxyl ion and the formation of an isocyanate. The latter gives *N*,*N*'-bis(diphenylphosphinylmethyl)urea in the presence of water. The rearrangement of diphenylphosphinylacetohydroxamic acid directly to the isocyanate was observed on heating with excess triethyl orthoformate. The final rearrangement products were *N*,*N*'-bis(diphenylphosphinylmethyl)urea and the ethyl ester of *N*-diphenylphosphinylmethylcarbamic acid.

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UDC 547.241

USSR

MUKHACHEVA, O. A., GOR'KOVA, S. A., NIKOLAYEVA, V. G., RAZUMOV, A. I., Kazan' Chemical-Technological Institute imeni S. M. Kirov, Kazan, Ministry of Higher and Secondary Specialized Education RSFSR

"Studies in the Series of Phosphinous and Phosphinic Acids. LXII. Phosphorylated Hydroxamic Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 2004-2009

Abstract: The following method was developed for synthesis of phosphorylated hydroxamic acids. Hydroxylamine hydrochloride was suspended in absolute methanol, and potassium methoxide was added with stirring. After removing the precipitated KCl, a methanol solution of ethyl ester of β-diethylphosphinylpropionic acid was added, followed by more potassium methoxide to keep the pH at 9-10. The reaction was carried out in dry nitrogen atmosphere. After 10 hrs some crystalline potassium salt of the β-diethylphosphinyl-propionhydroxamic acid was obtained, the remaining product staying in solution. Next, the ion exchange resin KB-4 was added to the above mixture, which was allowed to stand for 6-7 hrs until the pH

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MUKHACHEVA, O. A., et al, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 2004-2009

became <7. The resin was filtered off, most of the solvent evaporated, and the residue poured into ether, from which crystalline β-diethylphosphinylpropionohydroamic acid was obtained, m.p. 106-107°. Other analogues were obtained in a similar fashion. Their IR spectra showed bands at 1680-1665 and 1650-1640 cm^{-1} (C:O), 1565-1540 cm^{-1} (NH), 1180-1140 cm^{-1} (P:O), and at 3170-3140 cm^{-1} (NH and OH). Introduction of the phosphoryl group did not change basic properties of hydroxamic acids. Biologically, they appeared as weak antidotes against phosphorus organic toxins. The authors thank L. A. CHEMODANOVA for taking the IR spectra.

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USSR

LIVSHITS, B. G., IZGORODIN, A. K., NIKOLAYEVA, V. N., and ESVILING, M. YA.

"The Effect of Titanium on the Plasticity and Nature of Fracture of YuNDK35T5-Type Alloys"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1970, pp 116-119

Abstract: This article contains an investigation of YuNDK35T5-type alloys with 4,5,6, and 7% Ti. The microthermal emf and microhardness of the alloys were measured in the highly coercive state in order to determine the effect of titanium on liquation. The static transverse strength and elastic-plastic bending deflection were determined. Interferometric, fractographic, and microstructural studies were made of the fractured samples. Increasing the titanium content from 4 to 7% increased the degree of liquation in the alloy and the plasticity with respect to the grain body. Increasing the titanium content in YuNDK35T5-type alloys to 7% is expedient for simultaneous development of a method of improving the boundary state. An equation is derived for σ as a function of the titanium content in the form of a regression line.

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UDC 621.789:620.186.1

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LIVSHITS, B. G., ASTRAKHANTSEVA, N. A., IZGORODIN, A. K., NIKOLAYEVA, V. N., (DECEASED), KHLOMOV, V. S., and TSVILING, M. YA., Moscow Institute of Steel and Alloys

"Effect of Titanium on the Properties of the Beta- and Beta$_2$-Phases and Brittleness of Annealed Alloys of the YuNDK35T5 Type"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, Aug 73, pp 37-40

Abstract: The effect of titanium on the brittleness of type YuNDK35T5 alloys in the equilibrium state at 770°C was studied, and hardness, chemical composition of beta- and beta$_2$-phases, and their effect on the failure process were determined. The four test samples contained (in wt %): 34-31 Fe, 15 Ni, 8 Al, 35 Co, 4,5,6,7 Ti, and 4 Cu. The chemical composition of the phases is also given. Mechanical tests showed that as titanium content increases so does bend strength, percentage of cases of bending with cracks of the beta-phase, and percentage of cases of cessation of beta-phase precipitation, while decreases were noted for the number of secondary cracks in one sample, percentage of branch cracks, and beta-phase microhardness. The value of the critical temperature was determined for alloys YuNDK35T5 and YuNDK40T7 which has been

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LIVSHITS, B. G., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 8, Aug 73, pp 37-40

arc melted and annealed at 770°C for 2500 hours. T_{cr} was 680 and 700°C, respectively. The effect of the beta- and beta$_2$-phases on alloy failure for the varying titanium content was explained in that in all the studied alloy samples a crack passes into the beta$_2$-phase and bends the beta-phase precipitate. With increased Ti content, the attempt of cracks to bend beta-phase precipitates grows. In the alloy with 4% Ti, in 30 cases out of 100, cracks bend in their advancement of the beta-phase, and in the alloy with 7% Ti, in 65 cases out of 100. Crack cessation occurs, as a rule, in the beta-phase precipitations. This indicates that the beta-phase is less brittle than the beta$_2$-phase and that with increased Ti content the beta-phase does a better job than the beta$_2$-phase in hindering the advancement of a brittle crack. Three figures, two tables, five bibliographic references.

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USSR

UDC 629.78.018.1

ALEKSEYEV, Yu. N., KOLOSHNITSYN, V. A., MALYSHEV, G. P., NIKOLAYEVA, V. N. and SERGIYEVSKIY, N. A.

"An Experimental Study of the Effect of Surface Cooling on Laminar-Turbulent Transition in the Boundary Layer"

Minsk, Teplo- i Massoperenos (Heat and Mass Transfer), Vol 1, 1972, pp 171-175; (Referativnyy Zhurnal, Series 41, No 6, 1972, Abstract No 6.41.181)

Abstract: The purpose of this study was to investigate the effect of surface cooling on flow regime in the boundary layer, given mainly subsonic flow rate around abody, at which time air compressibility can be ignored. The experiment was conducted with identical models in two different wind tunnels with different degrees of turbulence: for the first tunnel, $\varepsilon = 0.5\%$, for the second, 0.08%. The model was in the form of a hollow aluminum cylinder 100 mm in diameter, the nose cone being in the form of an ellipsoid of rotation with axis ratio $1/b = 9$. The surface of the model was polished; length of the working section was 2.0 m. Distribution of static pressure was marked by absence of a gradient over practically the entire length of the working section. The electrothermoanemometric method was used to determine flow regime in the boundary layer. Wall temperature was measured with use of calked

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USSR

ALEKSEYEV, Yu. N., et al., Teplo- i Massoperenos (Heat and Mass Transfer), Vol 1, 1972, pp 171-175; (Referativnyy Zhurnal, Series 41, No 6, 1972, Abstract No 6.41.181)

chromel-copel thermocouples. During the experiment the transition position was determined twice: in the first instance, for $T_w = T_\infty$, while in the second, the cavity of the model was filled with melting ice. Experimental procedures and results are given in tabular form. It is concluded that 1) surface cooling leads to stabilization of flow in the boundary layer of an incompressible gas, and 2) with increase in thermal head the thermal Reynolds number rises. Biblio. 4, illus. 3, tables 1.

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USSR

UDC 669.018.2-13-15:539.26

LIVSHITS, B. G., NIKOLAYEVA, V. N., TSVILLING, M. Ya. and YAKOVLEV, A. P., Moscow Institute of Steels and Alloys

"Structure of YuNDK35T5BA Alloy Following Hot Forming and Heat Treating"

Moscow, Izvestiya vysshikh uchebnykh zavedeniy, Chernaya metallurgiya, No 3, 1972, pp 132-134

Abstract: The purpose of this study was to find a way of hot forming YuNDK35T5BA alloy without disrupting its initial grain orientation <100>. The experiment involved specimens (with columnar crystals) of alloys of two compositions.

No. of Alloy	Method of Melting	Co	Ni	Al	Cu	Ti	Nb	S	Ce	Fe
1	In vacuum	35.0	14.5	7.2	3.5	4.5	1.0	0.15	0.1	Remainder
2	In air	35.0	14.5	7.2	3.5	5.0	1.0	0.2	-	"

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USSR

LIVSHITS, B. G., et al., Izvestiya vysshikh uchebnykh zave eniy, Chernaya metallurgiya, No 3, 1972, pp 132-134

The microstructure of the specimens was examined following hot forming and heat treating at 810, 650, and 550°C. Both temperature and time specifications have been determined for the YuND35T5BA alloy to effect a single-phase state. The initial orientation <100> appears to be adequately retained after complete treatment for high coercivity. (3 illustrations)

USSR

UDC 620.186:669.018.58

LIVSHITS, B. G., IZGORODIN, A. K., NIKOLAYEVA, V. N., TSVILING, M. Ya. and KLYCHEVA, V. A., Moscow Institute of Steel and Alloys

"Study of the Kinetics of Gamma-Phase Formation in YuNDK35T5-Type Alloys at 830-900°C"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 6, 1972, pp 65-66

Abstract: The study was conducted on cast alloys quenched to a mono β_2-phase from 1240°C. The quenched specimens were put through low-temperature isothermal treatment at 900, 870, 850, 840, and 830°C. The holding times for each temperature were 15, 25, 45, 60, and 180 min, respectively. The specimens were cooled in open air. The amount and kinetics of the phase separation were determined in 50 fields of vision by Glagolev's method. Titanium is shown to promote intensive γ_1-phase separation (up to 950°C), which is undesirable from the viewpoint of low-temperature treatment. Microstructural analytical data indicate that the reduction of Al content from 9 to 7% intensifies $\beta_2 \rightarrow \gamma_1 + \beta_2$ transformation at all test temperatures. Noteworthy is the fact that the reduction of Al content to 7% markedly affects the decomposition kinetics at 900-870°C but much less at 840 and 830°C. The results of the study have shown that low-temperature treatment of YuNDK35T5 alloys must be conducted at minimum temperatures and minimum possible hold times. An increase in Ti

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USSR

LIVSHITS, B. G., et al., Metallovedeniye i termicheskaya obrabotka metallov, No 6, 1972, pp 65-66

contents and a reduction of Al contents inhibit low-temperature treatment. (1 table, 8 bibliographic references)

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USSR

UDC 621.791.011.001.5:669.721 + 669.5

ANTONOV, YE. G., Engineer, POPOV, A. S., Engineer, YAKUSHIN, B. F., Candidate of Technical Sciences, OSOKINA, T. N., Engineer, NIKOLAYEVA, V. S., Technician, MIKHEYEV, I. M., Engineer, SMIRNOVA, YE. I., Engineer, SHPAGIN, B. V., Engineer, and BABADZHANOVA, I. S., Engineer

"Effect of Rare-earth Elements on the Weldability of Magnesium-Zinc and Magnesium-Zinc-Zirconium Alloys"

Moscow, Svarochnoye Proizvodstvo, No 12, Dec 70, pp 6-8

Abstract: The effect of some rare-earth metals on the weldability of magnesium-zinc and magnesium-zinc-zirconium alloys was studied in experimental melts. Sheets of the alloys, 2 mm thick, were obtained by rolling on a "Duo" laboratory mill from flat ingots cast in metal molds. Before rolling, the ingots were heated to 380-400° C (11 intermediate heats, 2-3 passes). Shrinkage was 15-25 percent. After rolling, the sheets were annealed at 260° C for an hour. The filler wire was made of the same material. The results indicate that rare-earth metals (neodymium,

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ANTONOV, YE. G., et al., Svarochnoye Proizvodstvo, No 12, Dec 70, pp 6-8

lanthanum, mischmetal) at the rate of up to 0.6 percent by weight affect the hot-shortness of the studied alloys in different ways during welding. The most probable reason for this is the varying effect of rare-earth metals on the plasticity of the studied alloys in the region of the lower limit of the brittle temperature range, as well as the varying effect on the magnitude of the latter. The weld cracking resistance of the alloys can be increased by alloy additions of lanthanum and cerium mischmetal and the use of filler wire (2 percent Zn, 0.45 percent Zr, 3.44 percent cerium mischmetal, the rest Mg).

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USSR

UDC 621.791.019

ANTONOV, Ye. G., POPOV, A. S., YAKUSHIN, B. F., OSOKINA, T. N., MIKHEYEV, I. M., SMIRNOVA, Ye. I., SHPAGIN, B. V., and NIKOLAYEVA, V. S., Moscow

"Metallurgical Action on Seam Strength in Magnesium Alloy Welding"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 71, pp 53-55

Abstract: The problem considered in this paper is the metallurgical means that can be used to deal with cracks in magnesium alloy welds, specifically magnesium alloyed with zinc, and the efficiency of the means. Melts of the VMD3 series and several magnesium-zinc melts were the subjects of the experimentation; the defect of the first class of alloys is the tendency of its welds to develop heat cracks caused by the change in the lanthanum content. It was assumed in these tests that the introduction of rare earth metals into the alloys would improve their resistance to the formation of cracks since magnesium forms eutectics with these metals. A conclusion reached by the authors is that one cause of cracks forming in the welds that did not contain zirconium is the large crystalline structure of the weld metal, and that the resistance of the weld to cracks could be improved by the addition of 0.55% Zr.

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NIKOLAYEVA, V.V.

SPRS 5205
6.73

II-5. CALCULATING THE GROWTH AND ETCHING RATES OF SILICON IN THE SILICON-CHLORINE-HYDROGEN SYSTEM

(Article by V. V. Nikolayeva, I. M. Skvortsov, Moscow; Novosibirsk, III Simpozium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 15)

In this report a study was made of the causes of nonconcidence of the experimental growth and etching rates of silicon and those calculated by the diffusion model. The experiments performed by simulation of the growth-etching equilibrium in the flow demonstrated that the input compositions of the mixture ($SiCl_4$-HCl-H_2) corresponding to the zero growth rate of silicon are distinguished from the thermodynamic equilibrium composition of the gas for the silicon-chlorine-hydrogen system. It was found that when calculating the growth and etching rates by the diffusion model the minimum divergences with the experiment occurred if the thermodynamic equilibrium composition of the gas mixture in the calculation relations is replaced by the equilibrium composition defined for real conditions, and in the case of etching we introduce a correction taking into account the lesser thickness of the boundary layer for silicon dichloride.

- 14 -

NIKOLAYEVA, V. V.

SO: JPRS 59279
14 June 1973

ALLOYING EPITAXIAL LAYERS OF SILICON WITH BORON AND ARSENIC USING GAS DISCHARGE

[Article by T. A. Dutkina, G. F. Lynar', V. V. Nikolayeva, I. N. Skvortsov; Novosibirsk, Protsessy Rosta i Struktura Monokristallicheskikh Sloyev Poluprovodnikov -- Trudy Simpoziuma, Russian, Part 2, 1969, pp 79-84]

The problem of controlled alloying of epitaxial films by semiconducting materials during growth time is one of the most important in epitaxial technology.

The recently published [1] method of alloying silicon epitaxial layers by creating a spark discharge in hydrogen or $SiCl_4$ between electrodes containing the required admixture is extremely interesting inasmuch as the processes controlled by the electrical methods are, as a rule, flexible and easily automated. In addition, with corresponding selection of the electrodes and the gas media, it can be used for epitaxial growth not only of silicon but also a number of other semiconducting materials.

In view of the greatest practical importance of epitaxial technology for manufacturing the silicon transistors, this alloying method was investigated in the example of silicon epitaxy. The growth was carried out by the method of reducing silicon tetrachloride with hydrogen in high-frequency devices with a vertical reactor (Figure 35).

Experiment

A study was made of the alloying of the donor (arsenic) and acceptor (boron) impurities.

In contrast to reference [1] where the pulse generator was used, the feed to the discharger came from a high-voltage DC source. The electrodes were rods made of pure arsenic or lanthanum boride. In all the alloying experiments, the mole ratio of $SiCl_4/H_2$ was 0.01, the growth temperature was 1250°C, the total hydrogen flow rate through the reactor was 360 liters/hour. The gas distribution system had three main lines: 1 -- the basic hydrogen flow line, 2 -- the $SiCl_4$ saturation line, and 3 -- the alloying line. For all the manipulations with flow rates, the total flow rates through lines 1 and 3 remained constant.

NIKOLAYEVA, V.V.

50: JPRS 59279
14 June 73

SELECTIVE GROWTH OF EPITAXIAL LAYERS OF SILICON

[Article by I. M. Skvortsov, V. V. Nikolayeva, Novosibirsk, Protsessy Rosta i Struktura Monokristallicheskikh Sloyev Poluprovodnikov -- Trudy Simpoziuma, Russian, Part 2, 1969, pp 129-137]

The method of reducing silicon tetrachloride by hydrogen is used widely to grow epitaxial layers of silicon.

The flow systems with a horizontal reactor have become widespread in which growth takes place simultaneously on several substrates around which the gas flow takes place successively.

The ordinary conditions of the "commercial process" of growth (the terms was borrowed from reference [1]) are as follows: the temperature on the substrates 1,200-1,250° C; the mole ratio of $SiCl_4/H_2$ at the input to the reaction chamber is 0.01; the hydrogen flow rate through the reactor is 11.0 liters/min (the linear velocity is 14.6 cm/sec). Under these conditions the growth rate of the epitaxial layers is about 1 micron/minute, and the dispersion of the layer thickness on five or six plates does not exceed ± 10 percent of the mean value.

Recently reports have appeared on the development of methods of selective growth of epitaxial layers of silicon in the chloride process on silicon substrates partially masked by the SiO_2 layer [2, 3]. The authors of these papers have indicated that under the conditions of the "commercial process" the deposition of the silicon on the masked substrates takes place nonselectively: in the form of a monocrystalline layer on a free silicon surface and in the form of polycrystalline grains on segments coated with SiO_2.

In reference [2], the selectivity of the growth was achieved as a result of conducting the process under specific conditions: in the horizontal reactor at a temperature of 1,200° C with an exceptionally high concentration of silicon tetrachloride in hydrogen (mole ratio of $SiCl_4/H_2$ = 0.034) and a very small gas flow through the reactor — 100 liters/hour. According to the data of reference [2], on the first substrate (zone A) the silicon is deposited nonselectively. In the following zone B the deposition is selective, but the growth rate of the layer is inconstant over the zone.

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--HEAT TREATMENT OF, SILICON, STEEL 55S2 SPRINGS -U-

AUTHOR-(02)-NIKOLAYEVA, V.V., KOVALENKO, A.S.

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2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0133005

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HEAT TREATMENT INTENDED TO IMPROVE THE GENERAL QUALITY OF SI STEEL 55S2 SPRINGS IS DESCRIBED. QUENCHING FROM THE TEMP. OF THERMOMECHANICAL TREATMENT INCREASED THE LIFE OF THE SPRINGS BY 30PERCENT. SUITABLE TEMPERING TEMP. LAY BETWEEN 480 AND 530DEGREESC, DEPENDING ON THE SIZE OF THE PARTS IN QUESTION, AND THE OPTIMUM HOLDING PERIOD AT THESE TEMP. WAS 28-38 MIN, RESULTING IN A HARDNESS OF SIMILAR TO 400 HB.

UNCLASSIFIED

USSR

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UDC 536.421.4+536.421.1

LOZOVSKIY, V. N., GERSHANOV, V. Yu., KALINYUK, A. I., NIKOLAYEVA, Ye. A., POPOV, V. P., and UDYANSKAYA, A. I.

"Basic Laws of Silicon Crystallization for a Zone Melt With a Temperature Gradient"

V sb. Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations -- collection of works), Minsk, "Nauka i tekhn." 1971, pp 91-97 (from RZh-Fizika, No 9, 1971, Abstract No 9E382)

Translation: The kinetics of a zone melt with a temperature gradient are experimentally investigated in Si-Al, Si-Ag, Si-Au, Si-Fe, Si-Cu, Si-Ni, Si-Sn, Si-Pt systems. Curves expressing the dependence of the liquid zone migration rate on its thickness and temperature are obtained for these systems, the values of the activation energy of zone movement are found, and the effect of the third component on the zone velocity is determined; it is established that, in the region of fine zones and small temperature gradients, the stability of the zone movement is independent of the anisotropy of the solution and the crystallization; in the opposite case the morphology of the zone is determined by slowly dissolving planes of the (111) type. Author's abstract

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USSR

UDC 621.382.002

LOZOVSKIY, V.N., NIKOLAYEVA, YE.A., UDYANSKAYA, A.I., SENSHINOV, V.IU.

"Forming Of Electrically Heterogeneous Microstructure In Crystals By The Zone Melting Method With A Temperature Gradient"

V sb. Vopr. mikroelektroniki (Problems Of Microelectronics--Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 167-172 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B428)

Translation: In the volume of low-resistance Si, microregions are produced with resistivities equal to (1-2) . 10^2 ohm.cm; p-n junctions are easily obtained with the aid of linear aluminum zones in n-Si, and zones of complex composition make it possible to introduce certain impurities into the crystal; zone melting with a temperature gradient makes it possible to create p-n junctions with an inverse impurity gradient, and others.

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USSR

UDC 621.382.002

LOZOVSKIY, V. N., NIKOLAYEVA, Ye. A., POPOV, V. P., UDYANSKAYA, A. I., GERSHANOV, V. Yu.

"Concerning the Dimensions and Configuration of Electrically Heterogeneous Structures Obtained by the Zone Melting Method With a Temperature Gradient"

V sb. Vopr. mikroelektroniki (Problems of Microelectronics -- Collection of Works), Kiev, "Nauk. dumka," 1971, pp 163-167 (from RZh--Elektronika i yeye primeneniye, No 10, October 1971, Abstract No 10B429)

Translation: The geometrical characteristics are considered of electrically heterogeneous structures obtained in Si by the zone melting method with a temperature gradient as a function of the dimensions and form of the liquid zone, and also the form of its path. It is shown that zone melting with a temperature gradient makes it possible to form microstructures with diversified dimensions and form: multilayer, perpendicular surfaces of rectangular form; grid structures; cylindrical channels; and others. Using metal sputtering and subsequent photolithography, it is possible to obtain structures of practically any configuration. 1 ill. 5 ref. I.M.

1/1

USSR

UDC 612.017.11-06:613.646

NIKOLAYEVA, Ye. N., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

"Natural Immunity in Workers Exposed to Different Industrial Microclimates"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 7, 1973, pp 41-43

Abstract: Immunobiological responses of laborers experiencing different microclimates (builders working outside, hot workshop laborers, machine assembly shop laborers) were compared in relation to season. Neutrophil phagocytic activity, skin and salivary bactericidal properties, and bacteria quantities deep within the skin were measured. Builders working in the sun in the presence of variable microclimate displayed the greatest bacterial resistance with respect to all indexes. Indoor laborers experiencing normal microclimate had lower immunobiological reactivity in both seasons. Laborers subjected to high, fluctuating temperature and infrared radiation in hot workshops had the lowest reactivity, especially low in summer. Reactivity of the last group is considered unfavorable, and protection from thermal radiation is recommended, particularly in summer.

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